

## Pasture Fertilization Seen as Need in Crop Use Statistics for U.S.

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### Part II All Crops and Cropland Pasture

APPROXIMATELY 30% of all harvested crops and cropland pasture in the United States received fertilizer during 1954. Variations in the percentage of the harvested acreage fertilized (Table 1) are related primarily to the per-acre value of the crop. Highest percentages are associated with high cash-return crops, and lowest percentages with the low-return crop. For example, 97% of the tobacco, but only 10% of the hay and cropland pasture acreage receives fertilizer.

Sixty percent of the harvested corn acreage was fertilized in 1954, compared with an estimated 44% in 1947, and 48% in 1950(1). The proportion of total acres fertilized has increased more rapidly in recent years for corn than for any other major crop.

Average amounts of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O used per fertilized acre, as given in Table 1, are 298 lb. an acre for tobacco, 227 lb. for potatoes and sweetpotatoes, and 209 lb. for vegetables. Lowest rates are used on the small grains reflecting the effect of both lower cash returns and lower response to higher rates, as compared with those of corn, root crops, tobacco, and cotton.

About one third of all the primary nutrients used in commercial fertilizer is applied to corn, compared with only about 10% to cotton, its nearest competitor (Table 2). This results from the large acreage receiving fertilizer rather than high rates of application. After corn and cotton, the crops receiving the next highest portions of fertilizer are hay and cropland pasture, oats and barley combined, wheat, and vegetables, in that order.

North Carolina with 78% of its harvested crops and cropland pasture acreage receiving fertilizer, ranks first among the 48 states (Table 3). The next states in descending order are Rhode Island with 76%, South Carolina and Georgia,

each with 75%, and Maryland with 70% of their total harvested acreage fertilized. Low ranking states are North Dakota with 8%, Wyoming, Montana, and Colorado with 7%, Nevada with 4%, and South Dakota with 3%.

States in which a high proportion of fertilizer use is on vegetables, fruit, tobacco, or other specialty crops, rank highest in average rate of application per fertilized acre. Examples are Maine, with 382 lb. of plant nutrients, followed by Connecticut, New Jersey, and Florida, with 255, 232, and 208 lb., respectively.

In the intensely-farmed potato areas of Aroostook County, Maine, the average rate is 628 lb. an acre. In states where general farm crops predominate, the rate of application is influenced by soil, climate, type of farming, and value per acre of crops grown.

About 75% of the fertilizer ton-  
(Turn to FERTILIZER USE, page 20)

## Phytopathological Society Meets for 50th Anniversary

BLOOMINGTON, IND.—The use of fungicides for the control of various plant diseases comprised part of the program agenda for the 50th anniversary meeting of the American Phytopathological Society which was conducted at the University of Indiana here Aug. 25. Plant pathologists from many parts of the country presented papers describing their work and studies in plant disease control.

Dr. Paul R. Miller, plant pathologist with the U.S. Department of Agriculture, Beltsville, Md., described the plant disease forecasting system now in use to warn of probable outbreaks of diseases which could cause damage to crops.

"This year," he related, "Southern tobacco growers were forewarned of blue mold, a fungus disease; Middle Atlantic truck gardeners know what to expect from downy mildew of lima beans, as do Midwestern and Northeastern potato growers from the dangerous late blight. Similar predictions of apple scab, wheat leaf rust, bacterial wilt of corn, and downy mildew of cucurbits are helping growers stay ahead of these diseases," he said.

This American plant disease warning service functions through the close cooperative efforts of the U.S. Department of Agriculture and the State Agricultural Experiment Stations and Extension Services, it was explained.

Dr. Miller, who coordinates and directs the warning service, said the  
(Turn to PHYTOPATHS, page 8)

## Farm Bill Passes After Period of Much Uncertainty

Despite Predictions of  
No Action, Congressmen  
Adopt Amended Version

By JOHN CIPPERLY  
Croplife Washington Correspondent

WASHINGTON — Congress has passed the farm bill. Final action came Aug. 18 when the Senate, by voice vote, accepted the House-passed version of the bill and sent it forward to the White House for certain presidential approval. The passage of the measure can only be described as a long stride in the direction of complete adoption of the Benson farm program and reluctant recognition by the shattered farm bloc in Congress that the old program, which dates back to 1933, has lost its shadow and substance.

Here is the story of the aftermath which saw many Washington observers write out the bill from practical politics. The prospect of farm legislation in this session of Congress was completely dead, they reported a week ago. Yet it came back to life, as predicted in Croplife in reports of the past several weeks. (See editorial comment, page 22 this issue.)

As Congressmen faced up to debate the bill in both chambers they were unable to kill completely the old parity concept as a bench mark for price support levels. In the case of corn they did accomplish that goal, but for cotton the administration had to give way to House opposition. But it is important to note that even under  
(Turn to FARM BILL, page 5)

## Tolerance Fees Not for Industry to Pay, NAC Assn. Executive Says

WASHINGTON — That the food and drug laws exist for the protection of the public and not for the benefit of pesticide manufacturers who request residue tolerances or exemptions, was pointed out by Lea S. Hitchner, executive secretary of the National Agricultural Chemicals Assn., in a recent statement.

The statement was made on behalf of the NAC membership in opposition to the Aug. 7 announcement by the Federal Food and Drug Administration that fees would be increased for the establishment of tolerances under the Miller pesticide amendment to the Federal Food, Drug, and Cosmetic Act.

"Industry's position on the matter at the time the amendment was pending in Congress, and unchanged to date, is that this law is for the protection of the public and not for the benefit of those requesting residue tolerances or exemp-

(Turn to NAC, page 8)

### Inside You'll Find

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<sup>1</sup>The authors gratefully acknowledge the assistance of field staff members of the Farm Economics and the Soil and Water Conservation Research Divisions, Agricultural Research Service, and representatives of State Agricultural Experiment Stations and Extension Services for supplying estimates on nutrient use. Esther J. Fox assisted in the statistical work and in the preparation of the maps.





Joe Tuning

### New Solutions Line Announced by Spencer

KANSAS CITY, MO.—Spencer Chemical Co. has announced the addition of a line of non-pressure direct-application solutions to its nitrogen products. Joe Tuning, who has been handling anhydrous ammonia sales, has been named to coordinate the sales of both solutions and anhydrous ammonia. He will have offices in Kansas City, according to J. C. Denton, vice president in charge of agricultural chemicals for the firm.

The new non-pressure solutions, trademarked "URA-Green," will be produced at Spencer's Vicksburg, Mississippi Works, and at Henderson, Ky. At the latter place, a 100-ton-a-day plant for both liquid and solid urea is under construction.

Three men have been assigned to work with Mr. Tuning in setting up the sales and distribution program. Ray M. Mitteness, formerly Spencer agronomist in Iowa, and Darrell D. Martin will work in the areas which will be served by production from the Henderson Works. Ned Haldeman, Mississippi-Louisiana salesman, will work in the area served by the Vicksburg Works. Actual sales work on the new line of solutions will be handled by Spencer's regular agricultural chemicals sales force.

Spencer says that it plans to market "URA-Green" through its regular distributors of "Mr. N" ammonium nitrate and their dealers. A field storage tank program is being inaugurated whereby the company will lease tanks to its fertilizer distributors, who will make them available to their dealers.

The new product, compounded of urea and ammonium nitrate in water, will be available in solutions of 32, 30, and 28% nitrogen. Spencer says the three "e" Green in the trademark is a carryover from the recently-developed Spensol Green solutions.

### AP&CC Appoints New Assistant Sales Manager

LOS ANGELES—Allen T. Fuller, Jr., has been appointed assistant sales manager for the National Northern Division of American Potash & Chemical Corp., according to an announcement by George S. Wheaton, AP&CC vice president in charge of defense programs.

Mr. Fuller, formerly manager of administrative services for National Northern, will work with Jack A. Haynes, sales manager for the division.

T. H. Wrigley has been named to replace Mr. Fuller as manager of administrative services.

### COMPANY INCORPORATED

ST. LOUIS, MO.—Farm Chemical Corp. has been incorporated here with capital stock of \$25,000, to manufacture fertilizer.

### Best Names Two for Posts in New Ammonia Facilities in California

OAKLAND, CAL.—Lowell W. Berry, president of The Best Fertilizers Co. and chairman of the board of California Ammonia Co., has announced the appointments of Eugene L. Knickrehm and Francis W. Johnson as ammonia department head and assistant for ammonia, respectively, in connection with Best's contract for the construction and operation of the new Calamco ammonia plant, at Lathrop, Cal.

Mr. Knickrehm, a native of South Dakota, was most recently located at Whiting, Ind. with Calumet Nitrogen Products Co., a subsidiary of Standard Oil of Indiana. He has had other ammonia plant experience with Spencer Chemical, and at Grace Chemical, was superintendent of Grace's ammonia plant and is now vice president for production for Best.

Mr. Johnson, a Texan, has risen successively from chief operator through plant superintendent in chemical plants of Carthage Hydrocol, Spencer Chemical, Grace Chemical and Air Products, Inc.

### A. P. Guill Named to Market Development Post

NEW YORK—Albert P. Guill was named Western field representative for the market development department of Commercial Solvents Corp., according to an announcement by Dr. Frank E. Dolian, manager of the department.

Mr. Guill will be concerned with the development of new markets for the company's line including industrial, agricultural and automotive chemicals as well as animal nutrition products in Washington, Oregon, Idaho, California, Nevada, Arizona, and Utah. He will make his headquarters at the company's district office at 5052 East Slauson Ave., Los Angeles, Cal.

### Tree Farming Project Launched in Wisconsin

WAUSAU, WIS.—A new industry move to help the nation's small woodlot owners put idle lands to work growing trees as a crop was described at a three-state regional woodlot conference here recently.

James C. McClellan, chief forester for American Forest Products Industries, sponsor of the nationwide American Tree Farm System of growing timber as a crop on taxpaying lands, said a new how-to-do-it program, "Busy Acres," will be launched at the state level this fall.

This project, Mr. McClellan said, will be administered by state forest industry committees with the cooperation of other conservation groups and agencies.

"A recent study by the forest industries shows that thousands of landowners now know that timber is a crop," he told the conference. "Busy Acres will give them the steps necessary for successful timber production. It will show these small landowners how to do the job."

Four objectives of the new conservation plan were listed:

1. To stimulate action in turning idle lands into productive timberlands.
2. To stimulate tree planting and forestry management for optimum timber production.
3. To point up the full-use values and economic potential of managed timberlands.
4. To inform landowners how to apply basic principles of tree farming under local conditions.

The Wausau conference was the first of a nationwide series of meetings called by the U.S. Forest Service to bring out ideas for increasing timber production on the nation's small woodlot holdings.

### REMEMBER SAVANNAH

WASHINGTON—Pesticide industry people expecting to attend the 25th anniversary meeting of the National Agricultural Chemicals Assn. Oct. 29-31 should bear in mind that the meeting place has been changed from its original site. The convention will be held at the Gen. Oglethorpe Hotel, Savannah, Ga., according to announcements made by the NAC Assn.

### California Group Makes Plans for Unusual 3-Day Fertilizer Convention

SAN MARINO, CAL.—Ronald Reagan, motion picture and television star, will be a featured speaker at the 35th annual convention of the California Fertilizer Assn., to be held at the Ambassador Hotel, Los Angeles, Nov. 9-11, 1958. Mr. Reagan will speak following the luncheon for delegates and ladies on Nov. 10.

Dr. Russell Coleman, executive vice president, National Plant Food Institute, Washington, D.C., will bring to the convention an important message on the economics of the use of fertilizer during the morning business session on Nov. 10.

Roy Kennedy, general credit manager, California Spray-Chemical Corp., Richmond, will present to the business session pertinent thoughts concerning the problems of credit in the fertilizer industry. This will be of keen interest to every person engaged in the fertilizer business, according to John Hooper, convention program committee chairman.

Mr. Hooper said that William G. Hewitt, CFA president, will preside at the business session. Reports will be given by M. E. McCollam, chairman of the association's soil improvement committee, and by Sidney H. Bierly, general manager, concerning activities during the preceding year, and plans for 1959.

Four new members of the board of directors will be elected by active members of the association; the 1959 budgets will be considered; and 1959 officers will be elected by the newly constituted board of directors.

All ladies in attendance will be guests of the association at a social hour and luncheon at the Huntington-Sheraton Hotel in Pasadena. Following this luncheon, they will visit the Huntington Art Gallery and grounds. A ladies golf tournament, putting contests, and bridge and canasta tournaments will be featured.

The men will take part in golf and bowling tournaments. Delegates and their ladies will enjoy a dinner and dancing in the Coconut Grove, reserved for the exclusive use of this convention.

Information concerning the convention is available from Sidney H. Bierly, general manager, California Fertilizer Assn., 475 Huntington Drive, San Marino 9, Cal.

### DuPont Reassigns Four

WILMINGTON, DEL.—New assignments for four men in biological chemicals sales have been announced by the Du Pont Grasselli Chemicals Department. Merle E. Ward, who has been manager of agricultural chemicals for Du Pont Company of Canada since this company was organized, has been assigned to Wilmington as general product manager of agricultural chemicals. He succeeds Jack M. Zimmerman, who moves to the post of assistant district sales manager in Houston, Texas.

Dr. Dale E. Wolf has been transferred from assistant district sales manager in Philadelphia to the same position in the Atlanta district. Eugene F. Clement, who has been a Du Pont sales representative in the intermountain area, has been transferred to the Atlanta district.



Robert J. Kramer

### Velsicol Names New Advertising Staff Member

CHICAGO—Appointment of Robert J. Kramer to the advertising staff of Velsicol Chemical Corp. has been announced by L. E. Carls, advertising manager. Mr. Kramer has been with Velsicol since 1952. In his new position, he will assist in carrying out the company's advertising and sales promotion programs. He attended Loyola University.

The company is continuing to expand advertising efforts in support of its lines of agricultural and industrial chemicals, according to Mr. Carls.

### Kentucky Fertilizer Sales Climb in June This Year

LEXINGTON, KY.—Greatly accelerated sales of fertilizer were recorded in Kentucky for the month of June, 1958, over the same month of last year, according to figures issued by the Department of Feed and Fertilizer, of the Kentucky Agricultural Experiment Station. The grand total for June, 1958, was 40,544 tons as compared to 22,863 tons a year ago.

The sales of both mixed fertilizer and materials were up from last year. Mixed fertilizer, with a 5-10-15 grade leading, totaled 32,443 tons, as compared to 19,015 tons in June of 1957. The grade 5-10-15 rose, incidentally, from 3,027 tons in June, 1957, to 7,920 in the same month this year.

The second most popular grade was 4-12-8, with 5,949 tons. Last year's June figure for that grade was 4,374 tons.

Ammonium nitrate led the other materials in volume. It accounted for sales of 3,148 tons in June this year, as compared to 2,497 for June, 1957.

Sales of anhydrous ammonia made the largest jump, however, rising to 1,338 tons in June, 1958 as contrasted to only 130 tons in the same month last year.

Muriate of potash more than doubled in June of this year as compared to that month of 1957. The figures were 440 tons for June, 1958, and 209 tons for the same month last year.

Superphosphate sales were likewise impressive. A total of 749 tons was tallied for June, 1958 against a total of 276 for June, 1957.

### Short Course Announced

COLUMBIA, MO.—The annual soil fertility and plant nutrition short course at the University of Missouri, College of Agriculture, will be held Wednesday, Dec. 3 and Thursday, Dec. 4, according to an announcement by John Falloon, extension specialist, soils, at the University.

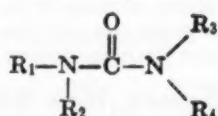
Further details of the subjects to be covered in the short course will be announced later, he said.



## Industry Patents and Trademarks

2,847,293

**Plant Growth Control and Herbicidal Composition and Process of Using the Same.** Patent issued Aug. 12, 1958, to Linden E. Harris, Portland, Ore., Vernon L. Hall, Palo Alto, Cal., and Frank J. Seibert, Bound Brook, N.J. and Irvin W. Bales, Westfield, N.J., assignors to Chipman Chemical Co., Inc., Bound Brook, N.J. A plant growth control and herbicidal composition capable when applied in one application at a sufficient rate of imparting a long-lasting soil sterilant effect against the growth of grasses and deep-rooted and leafy plants enduring at least 9½ months, said composition comprising as the essential active ingredients an alkali metal chlorate and an amount within the range from about 0.5 to about 10% by weight of the active ingredients of an N-aryl urea compound having the



wherein R is an aromatic radical having from one to five substituents selected from the group consisting of hydrogen, halogen, a nitro group, alkyl groups having from one to eight carbon atoms and aromatic radicals, and R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> each are selected from the group consisting of hydrogen and aliphatic hydrocarbon radicals having from one to three carbon atoms, and not more than two of R<sub>2</sub>, R<sub>3</sub> and R<sub>4</sub> is hydrogen, said herbicidal composition containing said admixture of said herbicidal compounds in a herbicidal concentration, said herbicidal compounds being mutually activating and producing a synergistic herbicidal effect, the effect of the chlorate against the growth of deep-rooted and leafy plants being synergized by the N-aryl urea compound, and the effect of the N-aryl urea compound against the growth of grasses being synergized by the chlorate to extend the duration of the effectiveness against grasses and deep-rooted and leafy plants over said period of at least 9½ months.

2,847,392

**Method of Conditioning Soil with a Non-Electrolyte Elastomeric Conjugated Diene Polymer.** Patent issued Aug. 12, 1958, to John C. Eck, Convent, N.J., assignor to Allied Chemical Corp., New York. The method of improving the porosity of soils having low porosity which comprises impregnating the soil with a coagulable material consisting essentially of a latex of a water-insoluble, nonelectrolyte, elastomeric polymer produced by polymerization of conjugated diene compound containing from 4 to 6 carbon atoms per molecule, the quantity of the polymer deposited being 12 to 100 pounds per acre of soil per inch of depth of penetration of the soil, thereby leaving the soil porous, loose and crumbly.

### Industry Trade Marks

The following trade marks were published in the Official Gazette of the U.S. Patent Office in compliance with section 12 (a) of the Trademark Act of 1946. Notice of opposition under section 13 may be filed within 30 days of publication in the Gazette. (See Rules 20.1 to 20.5.) As provided by Section 31 of the act, a fee of \$25 must accompany each notice of opposition.

**A-T-A**, in capital letters, for weed killer. Filed Oct. 23, 1957, by American Cyanamid Co., New York. First use Sept. 14, 1956.

**Malix**, in capitals and lower case, for agents for exterminating animal and plant pests. Filed June 12, 1957, by Farbwerke Hoechst Aktiengesellschaft, vormals Meister Lucius and Bruning, Frankfurt am Main, Höchst, Germany.

**Plant-Shoot**, in capital letters, for wetting agent for adhesion of growth

stimulants and the like to plants. Filed July 26, 1957, by Nott Manufacturing Co., Inc., Mt. Vernon, N.Y. First use March 4, 1957.

**Dowlap**, in capital letters, for organic compound for use principally as an ingredient in compositions for killing lamprey. Filed Sept. 30, 1957, by Dow Chemical Co., Midland, Mich. First use, Aug. 21, 1957.

**Dacfla**, in capital letters, for grain fumigant. Filed Nov. 29, 1957, by Diamond Alkali Co., Cleveland, Ohio. First use Nov. 4, 1957.

**Graflow**, in capital letters, for fertilizer additive to assure free flow. Filed June 5, 1956, by the Wickes Corp., Saginaw, Mich. First use April 25, 1956.

**Design, with words Southern Nitrogen, Dixie**, for fertilizer. Filed Oct. 17, 1956, by Southern Nitrogen Co.,

Inc., Savannah, Ga. First use Sept. 4, 1956.

**Design, with words Southern Nitrogen, with a large letter "N,"** for fertilizer. Filed Oct. 17, 1956, by Southern Nitrogen Co., Inc., Savannah, Ga. First use Sept. 4, 1956.

**Mira-Cell**, in capital letters, for plant growth stimulant. Filed Sept. 6, 1957, by Stern's Garden Products, Inc., Geneva, N.Y. First use March 25, 1957.

**Capital letter "L," with word "landmark" at bottom.** For plant food and fertilizer. Filed Feb. 7, 1958, by The Farm Bureau Cooperative Assn., Columbus, Ohio. First use Jan. 31, 1958.

**Rootagen**, in hand-drawn letters. For hormone powder for treating cut plants and growing roots thereon. Filed Feb. 26, 1958, by Princeton Phytochemicals, Inc., Princeton Junction, N.J. First use April 1, 1957.

**Super-Bud-Sprout**, in capital letters, for chemical stimulant for promoting growth and budding of plants. Filed Feb. 26, 1958, by Princeton Phy-

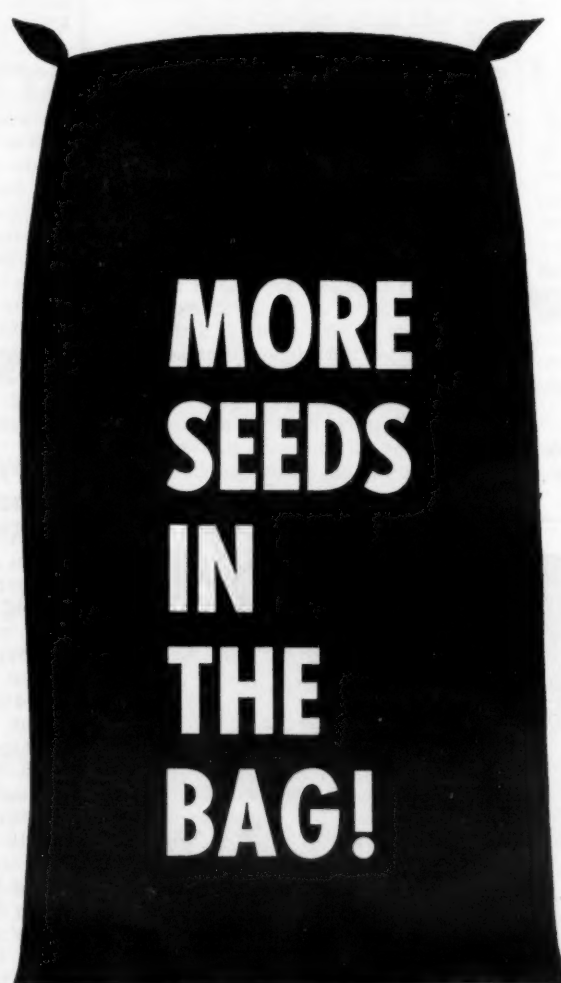
tochemicals, Inc., Princeton Junction, N.J. First use April 1, 1957.

**Miracle-Gro**, in capital letters, for water-soluble plant food. Filed Feb. 28, 1958, by Stern's Nurseries, Inc., doing business as Stern's Nurseries, Geneva, N.Y. First use April 15, 1951.

### Quackgrass Control in Potatoes Demonstrated

LAKE CITY, MICH. — Chemical control of quackgrass in potatoes will be demonstrated at the Michigan potato field day Sept. 3 at the Michigan State University experiment station at Lake City.

In addition to the quackgrass control demonstration, growers will have a chance to see some of the most promising potato seedlings in the north central states in a performance test. Other stops on the tour will include a scab control nursery, new varieties such as Huron and Plymouth, chemical weed control tests, a gibberellin (growth stimulator) study and date of planting experiments.



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# INSECT, PLANT DISEASE NOTES

## Corn Borer Counts Mounting in Iowa

AMES, IOWA—Corn borer egg mass counts on field corn have reached or exceeded 100/100 plants in 10% of the fields in Boone County. If this is indicative of the state, 10% of Iowa corn should be treated now. Pop corn, canning corn and seed corn growers should treat immediately if they have not already done so.

Hackberry nipple gall on hackberry leaves has been the most common single sample we have received the past three weeks. No spray measures are required for this unsightly pest. There is little or no damage to the trees.

Late sweet corn should be treated to protect it against corn earworms. Aphids and scales in trees are the cause of much honeydew on windows of cars parked under the trees.

Leafhoppers of several species are swarming to the lights at night.—Earl S. Raun.

## Cotton Insects Still on March in Arizona

PHOENIX, ARIZ.—Cotton is making good progress in all parts of the state, although many fields have been lodged or tangled up by high winds. In some areas some boll rot has set in. Cotton insects are causing injury in many fields, from Lygus, stink bugs, cotton bollworms, perforators, salt marsh caterpillar, fleahopper and possibly loopers. At the present time in most parts of the state the cabbage looper has been fairly well controlled with virus.

The insect picture in Maricopa County is as follows: Tolleson-

Laveen area, Lygus counts 8 to 9, loopers being controlled by virus. Some bollworms, stink bugs and perforators present. Gilbert-Chandler-Queen Creek areas, Lygus counts down but some fields running up to 35 to 40 per 100 sweeps. Stink bug counts very high. Some bollworms, spider mites and perforators and beet armyworms on the buildup.

Litchfield-Beardsley areas, loopers and perforators doing extensive damage. Some fields have high counts of Lygus and stink bugs. Bollworms, woolly worms and mites building up in some spots. In Palo Verde-Buckeye area, bollworms building up; loopers, perforators and woolly worms on the increase. Lygus and stink bug counts continuing high.

Glendale-Peoria-Deer Valley-Mesa-Tempe-Scottsdale areas, Lygus and stink bugs down from last week. Perforators building up in large numbers. Bollworms building up in the area. One field badly hit with thrips.

Graham County reports stink bugs continue very heavy on cotton and hegari. Cotton bollworm infestations spotted. Some cabbage loopers, but again only spotted infestations.

In Greenlee County a few bollworms and stink bugs. These two insects could cause injury and fields should be watched to prevent controls.

Cochise County: The virus of loopers were found in all fields examined in all parts of this county. Some bollworms and stink bugs are causing injury in some fields and should be watched very closely.

Yuma County reports an increase, in all areas, of the salt marsh caterpillar. This is accompanied in several

cases with a considerable number of cabbage loopers. Cotton leaf perforators are still doing considerable damage in many fields. In the Yuma Valley-Sommerton-Gadsden area, 5 to 30 Lygus per 100 sweeps with as high as 45% square damage. Stink bugs, salt marsh caterpillar and looper counts ranging from 0 to 5. North and South Gila Valley, increased activity of perforators, salt marsh caterpillar and cabbage loopers.—J. N. Roney.

## Heavy Infestations of Cotton Insects in Georgia

ATHENS, GA.—The true armyworm is in moderate to heavy infestations on Coastal Bermuda, fescue and millet in Gwinnett, in Hall, Gordon, Lumpkin, White, Hart and Elbert counties.

Heavy infestations of fall armyworm in the whorls of late corn in Greene and Hart counties.

Heavy infestations of tobacco budworm on Turkish tobacco in Hart and Elbert counties.

The false tobacco budworm has been found in heavy infestations on Turkish tobacco in Hart and Elbert counties.

Boll weevil infestation counts were made in 15 fields in North Georgia and ranged from 4 to 69% punctured squares, averaging 28% punctured squares.

Bollworm counts were made in 15 fields in North Georgia. The egg counts ranged from 2 to 13 per 100 terminal buds, averaging 6 per 100 terminals. Larval counts ranged from 0 to 28 per 100 terminal buds, averaging 4 per 100 terminals.—W. C. Johnson.

## Many Species of Pests Appear in Wisconsin

MADISON, WIS.—While corn earworm poses as a threat to sweet corn growers, other important corn insects should not be overlooked. European corn borer observations on Aug. 11, 12 and 13, in Walworth, Dane, Rock, Green, Iowa and Grant counties showed 14% of the borers were in the 4th instar, 70% in the 5th and 16% had pupated (some of these had emerged). Pupation hasn't been as high as expected, but this may change.

Twenty white egg masses per 100 plants were recorded for Rochelle, but only one white egg mass was found in Green County. In advanced Dunn County fields borers were relatively scarce (about 10% of the stalks were infested), but those observed were in the 5th instar. In Ozaukee County up to 30% of the plants were infested with borers evenly divided between the 4th and 5th instar. No pupation was found in Ozaukee or Dunn counties.

Corn leaf aphids are numerous in fields in many sections of the state, and serious injury to all the leaves on some plants has been observed. As high as 15% of the plants showed serious injury in a Rock County field, but 5% of the plants so affected is more common where this injury occurs. Over 90% of late planted corn in southern counties, where tassels are not yet out of the whorl, were reported to be infested. About 2% of the plants in a late planted Iowa County corn field were infested with fall armyworms.

More than 20% of a late planted Dunn County corn field showed armyworm leaf feeding which is related to the last heavy flight of armyworm moths. However, damage was cut to a minimum by several parasites. Reports of a similar nature in weedy corn have been received from other areas.

Lodging of corn planted several years in succession on the same field is due to northern corn rootworm damage. Reports of this injury continue to be received. Pupation of the rootworm has occurred, and the adult

beetles have been observed for the first time this year in the third tier of counties above the southern boundary.

Severe "hopperburn" damage causing potato vines to dry up is due to potato leafhoppers and is relatively common in untreated garden plantings, but treated commercial acreage has no problem. A few reports of Colorado potato beetle damage in untreated garden plantings have been received.

Red-legged grasshoppers in a good many fields of alfalfa are quite numerous, as they are along some fence rows and roadsides. They are rapidly approaching maturity and while some already have wings, more soon will have wings. Migration to new alfalfa seedings, tobacco and edges of corn will soon begin.

Alfalfa and tarnished plant bugs and adult meadow spittlebugs continue to be numerous in most fields, but potato leafhopper populations are spotty. It appears that a third cutting will be made in some fields before long. In many of these it may be advisable to treat the fall growth. The same is true for new seedings.

## Psylla Severe, New York Entomologist Reports

GENEVA, N.Y.—Repeated inspection of the leaves of pear trees for the presence of psylla, a major pest of pears, and thorough covering of the foliage with spray if the pest is present have been stressed as essentials for psylla control by E. H. Smith, entomologist at the New York Experiment Station at Geneva.

"This has been a very severe year for pear psylla," he comments. "Our spray program never achieves 100% control and psylla may build up despite the effective results obtained at time of treatment. The more insects which escape treatment, the quicker re-infestation occurs."

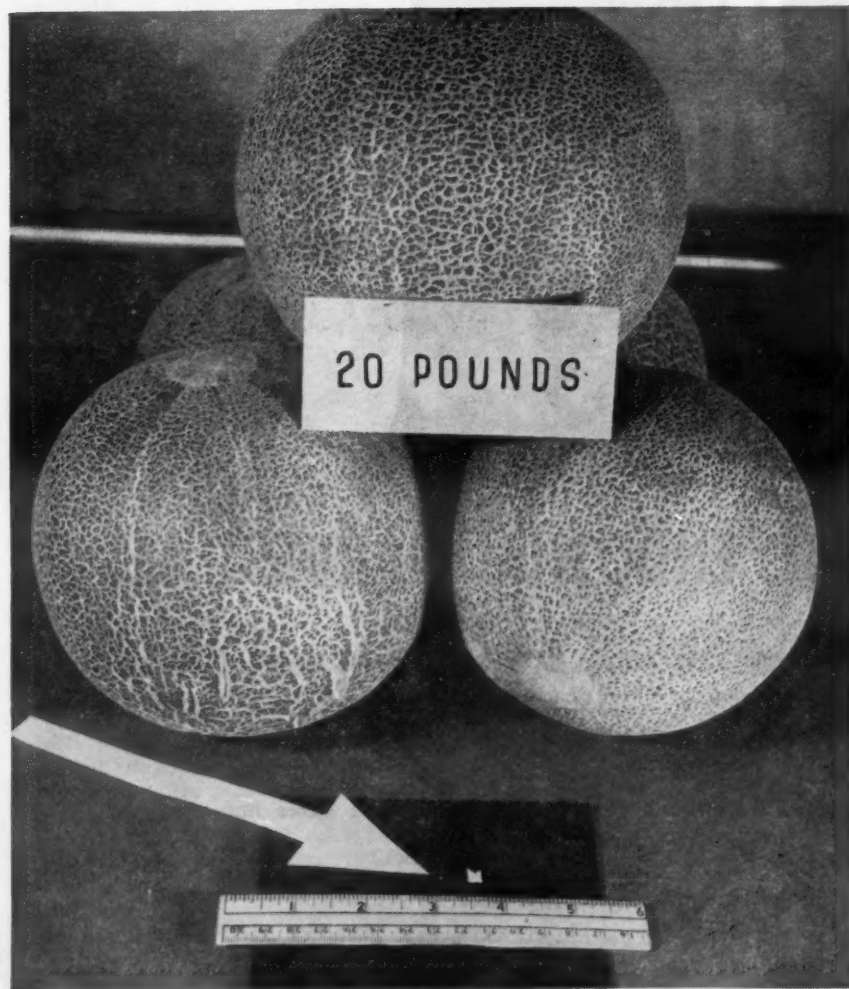
## Cotton Pests Still Active in North Carolina

RALEIGH, N.C.—Insects are still active in North Carolina. There are a few late fields of cotton in almost all counties and, of course, the entire crop in the Piedmont and northern areas is late with many fields needing insecticidal applications to protect the young bolls and until the crop is made. Some areas have had showers and a minimum of drouth conditions. The shedding of squares and young bolls has not been severe in these areas. On the other hand, in many areas there is quite an acreage of older cotton where the bolls are mature and all fruiting has stopped.

It is too early to comment on effectiveness of treatments this season, but generally it can be said that there are many fine fields of cotton in the state. High weevil populations have been present in a few fields all season; adjacent fields have often had very few. As a result, some growers have applied from 8 to 12 or 15 applications and others very few or none. The 2nd generation of weevils, migration and dry weather have all combined in some sections and a badly damaged crop of late bolls and weevils is in evidence. Generally it can be said it will pay growers who have late cotton, many almost mature and half grown bolls, to continue to protect their crop.

There has been considerable interest in cotton defoliation this year, but with the present dry, hot weather the need for defoliation becomes less necessary unless there is a change in conditions.

Defoliation is done to prevent boll rot which is not a problem now, to remove leaves, to hasten opening of cotton for early picking which should be done only a few days before cotton picking is planned, and on fields where the cotton will be picked mechanically. Mechanically-picked cotton represents only 2% of the cotton acreage in North Carolina.—Geo. D. Jones.



**HOW LARGE IS A RESIDUE?** The above photo, taken at the Shell Development Laboratories, Modesto, Cal., shows the extremely minute size of pesticidal residues, if it were possible to concentrate such material in one spot for observation (speck at point of arrow). K. E. Marple, director of the agricultural research division of Shell, says that the visual demonstration of the amount of a pesticide corresponds to a residue level of 0.1 ppm. "It is evident that the accurate determination of a quantity of material smaller than the head of a common pin in 20 pounds of a crop such as Persian melons (shown above) is a formidable task; however, such a determination is not only possible, but is being accomplished on a routine basis by many residue analysis laboratories throughout the country."



## FARM BILL

(Continued from page 1)

that concession both chambers of Congress gave lip service to a price support level based on a percentage of the immediate three years' national average market price when they approved the concept for corn.

Late last week it appeared evident that the farm bill was speeding along a super-legislative highway with passage apparent before the weekend adjournment. The House, which had previously declined to take up a farm bill, suddenly reversed itself and adopted an amended version of its previously defeated bill.

That measure, in many respects, was more acceptable to the U.S. Department of Agriculture than the Senate bill and all evidence available indicated that the Senate would promptly concur with the measure and send it to the floor for approval, thence to the White House for signature.

The new bill provides a change in farm crop production for cotton, rice and corn and other feed grains for 1959. It provides a basic cotton acreage minimum allotment base of 16.6 million from which those farmers who would accept this alternative may increase their proportionate acreage allotment from that base by 40%.

USDA officials estimate that the cotton farmers who will accept that increase at a lower level of price support—probably 65% of parity for their 1959 crop—will represent the larger cotton farms which were pin-pointed three weeks ago in the Croplife story disclosing Census Bureau figures on cotton production by counties of the U.S. It showed that of the entire cotton belt, only three of the fifty top counties producing cotton in the U.S. were east of the Mississippi River.

Cotton farms—probably the large cotton farms—will accept the lower level of support and take the 40% increase in acreage.

If that conclusion of responsible USDA officials is correct, it means a broadly increased market outlet for fertilizer chemicals in the cotton belt but with emphasis on the fifty leading cotton producing counties of the nation.

For the old cotton belt of the Southeast, with its small acreage farms, this means a smaller potential for sales of fertilizer or pesticidal chemicals. These small farms can never be a future prospect for farm chemicals as applied to cotton. As regards rice, that industry under this measure will avoid a cutback in the national acreage in 1959, and can establish a total rice crop acreage of about 1.6 million. If the farm bill had not been adopted by Congress, rice acreage would have been reduced to approximately half that amount.

In the case of feed grains—corn, oats, rye, barley and grain sorghums—price support levels for next year are sharply reduced.

That means a substantial reduction in the price support level for corn in the old commercial belt in 1959, but in the case of the non-commercial corn belt it means a substantial boost in the level of support.

This new farm bill will end acreage allotments for corn and put all corn production on a common basis of the higher of 90% of the immediate previous three years' average market price or 65% of parity, whichever is the higher. USDA officials estimate that this alternative will result in the range of support mentioned above.

The bill makes no provision for mandatory price supports for other feed grains—oats, barley, rye and grain sorghums—but they say that it has been consistent USDA policy to support these crops in the past

under discretionary authority which is unlikely to be discarded now—and that those crops will probably be price supported at a related price of 60% of parity adjusted to corn related feed values.

Under these circumstances USDA officials believe there will be no overall major changes in acreage of feed grain crops. What may be picked up increases in the non-commercial corn areas due to a higher level of support this year will be washed out when the cotton areas take up the available increase of cotton acreage for the larger farms. They will thus reduce corn acreage which heretofore was induced by the commercial corn area higher loan values.

It must be considered that the expansion of the commercial corn loan area resulted from removal of land from cotton acreage by allotment programs and such increases to corn acreage brought those counties

under a commercial corn belt loan classification.

That incentive is now definitely removed.

Another influence which is now in the making is the probability that USDA may reduce the level of price support for soybeans next year to prevent a substitution of corn acreage to beans, if the bean price support level is not reduced in line with the new price support level for corn. This year USDA officials wished to drop the soybean price support level down from the level adopted. Next year they are likely to attain their objective.

It is now clear that the farm bloc has been badly "busted" and that price supports are headed down and as in the case of corn acreage allotments are in the discard with more to follow probably.

Price supports for the other feed grains—oats, rye, barley and grain sorghums in 1959—will not be more than the 60% of parity noted above

which is hardly a production incentive and probably shall return these crops to their normal historical position as on-the-farm consumption commodities.

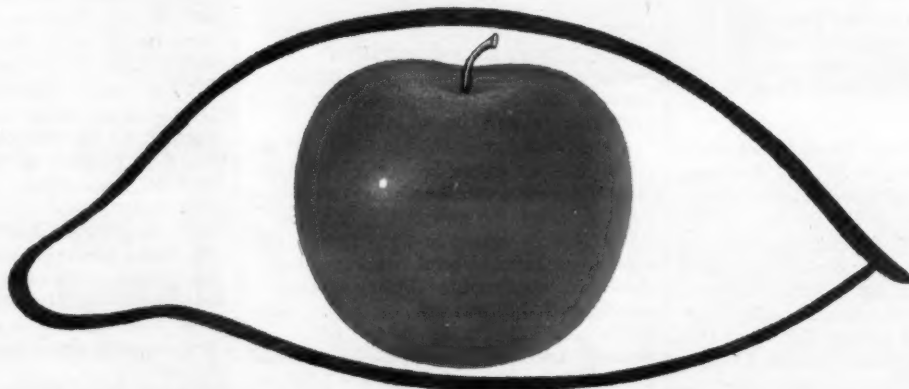
The best USDA opinion available here is that there will be no major change in total acreage of feed grain crops and that the old corn belt area will again emerge as the major supplier of that crop for the deficit feeding areas.

It is to that outlook that the fertilizer industry should turn as it makes its fertilizer sales plans for next year.

### NEW NURSERY

BURLINGAME, CAL.—The Roger Reynolds Nursery of Burlingame has recently been incorporated. The company retails farm chemicals and other materials for use by the home gardener. Principals in the firm include J. Ed McClellan of Burlingame, and G. Diana Pomeroy and H. L. Pomeroy of Atherton.

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## Speed, Friction, Intense Heat and Cold Involved in Jet Air Travel Complicate USDA Survival Tests of Air-Borne Pests

WASHINGTON — Complications arising from greater speed of jet aircraft and the resulting increase of both heat and cold are making more difficult the work of quarantine officials whose job it is to make sure no foreign insect pest has "hitchhiked" its way to the U.S. aboard planes.

The problems faced by USDA inspectors and others responsible for enforcing quarantine regulations were outlined in the USDA publication, "Agricultural Research" this month. It points out that when aircraft from any foreign country lands in the U.S., the planes are inspected inside and out. Plant material that may harbor insects is removed, and the inspectors search the interior for larvae, pupae, and adult stages of pests dangerous to agriculture and public health. They look at the wings of the aircraft for egg masses of destructive insects. And they treat infested aircraft with insecticidal aerosols.

But with the coming of the jet age, new quarantine problems arise. Though high altitude may be fatal to insects, high speeds cut the transportation time. USDA entomologists are conducting tests to determine the mortality of insect hitchhikers on jet wings or inside the aircraft in both heated and cold sections.

Experiments have been conducted by ARS entomologist W. N. Sullivan and entomology student E. B. Knippling in the laboratories at Beltsville, Md., and in actual flight tests in cooperation with the U.S. Navy Disease Vector Control Center, Jacksonville, Fla., the Naval Air Test Center, Patuxent River, Md., and the Military Air Transport Service, USAF.

Laboratory studies at Beltsville indicated that several species of insects were killed after 1 hour of refrigeration at 5° to -22° F. During tests at Jacksonville, yellow fever and common malaria mosquitoes, American and German roaches, rat

fleas, and flies died in the unheated areas of "Fury" fighter aircraft that flew for a period of 40 minutes at an altitude of 40,000 feet.

Insects were also killed when "Skywarrior" bombers flew for 3 hours at 40,000 feet. Outside temperatures in both instances varied between -58° and -78° F. In some areas warmed by radar and other electronic equipment, insects survived. During flights at lower altitudes, where temperatures are warmer, insects remained alive. What other insects will do under the same conditions and what various insects will do in other sections of the plane are still not known.

On present-day aircraft entering Miami (Fla.) International Airport, Phalaenidae egg masses occasionally are found. To determine the effect of jet speeds and altitudes on egg masses, eggs of laboratory-reared armyworms were laid on aluminum foil and the foil taped on the wings of jets before take-off at Patuxent.

When the aircraft returned, scientists checked the eggs usually the most difficult stage to destroy, and found they had been killed. Altitudes were up to 40,000 feet with outside temperatures as low as -76° F. More experiments must be made with other species of egg masses before final conclusions can be reached.

Laboratory tests showed that insects die at excessive temperatures, too. They're unable to stand as much heat as man. To determine how much heat insects could endure from friction in unrefrigerated sections of aircraft in supersonic flight, scientists conducted laboratory tests to estimate the thermal death point of several species. Insects were exposed from 15 to 60 minutes at 104° to 140° F. in an electric oven.

Northern house mosquitoes and common malaria mosquitoes showed 100 percent mortality at 113° F. Yellow fever mosquitoes and Mexican bean beetle larvae were killed at 122° F. and Mexican bean beetle adults, house flies, Japanese beetles, confused flour beetles, and American dog ticks at 131° F. Grasshoppers and Colorado potato beetles were hardest to kill. It took a temperature of 140° F. to kill all these insects.

Temperatures were recorded inside a grounded C-47 fuselage to sim-

ulate conditions in an uninsulated jet plane. On half the summer days the temperature inside the plane (parked in the sun) reached 120° F. or higher. Thus, many insects in uninsulated aircraft in the tropics would be killed throughout the year.

These studies help understand how air transportation may spread insect pests and what safeguards must be provided through quarantine procedures.

### Roger Friend Retires After 34-Year Service At Connecticut Station

NEW HAVEN, CONN.—Roger B. Friend, formerly chief entomologist and vice director of the Connecticut Agricultural Experiment Station, has retired after 34 years on the station staff. Following three years as a graduate assistant, he was made assistant entomologist in 1927 on completion of requirements for the Ph.D. at Yale University.

Pests imported from abroad were his first interest, especially insects attacking forest and shade trees, and he made comprehensive studies of their biology and control. His studies of the imported birch leaf miner, the European pine shoot moth, and the gypsy moth have provided essential scientific information and practical control of these pests.

In 1939, Dr. Friend was appointed chief entomologist to succeed the late Dr. W. E. Britton. A year later he was made vice director, a post he filled until December, 1951.

"The most important contribution Dr. Friend made to the state has proved to be his study of the gypsy moth, published in 1945 and reprinted in 1958," according to Neely Turner, who has succeeded Dr. Friend as chief entomologist. "His keen analysis of the facts available suggested that this pest had assumed the status of a native insect. He acted on this basis, and developed a new system of control which has stood the test of time."

Dr. James G. Horsfall, station director, says: "The department of entomology matured under Dr. Friend's leadership. His appreciation of the basic facts stimulated his staff to look beneath the surface for answers to our serious insect problems."

Dr. Friend lives at 34 Pickwick Road, Hamden. He expects to continue his interest in research on insects as an emeritus member of the station staff.

### Soybean Insect Control Described in Booklet

CLEMSON, S.C.—Circular 450, "Soybean Insects and Their Control," is being distributed by the Clemson Extension Service. It was prepared by W. C. Nettles, leader, Clemson Extension Entomology and Plant Disease Work.

Mr. Nettles points out that successful production of soybeans depends largely on control of certain insects which infest the crop. He says among insects which cause the most damage are the Mexican bean beetle, the velvetbean caterpillar, the corn earworm, and the lesser cornstalk borer. As other insects which infest the soybean crop, he lists stink bugs, armyworms, bean leaf beetles, blister beetles, cabbage loopers, and cucumber beetles.

Several insecticides now on the markets have proved effective in the control of these insects, and soybean production gives promise of further expansion, he says.

In the circular Mr. Nettles gives brief descriptions of the principal insect pests of soybeans and the recommended controls for these insects. Materials briefly described and included in the soybean insect control chart in the circular are DDT, toxaphene, parathion, cryolite, malathion, and methoxychlor.



Fred A. Manley

ADVERTISING POST — Fred A. Manley has been appointed to the newly-created post of director of advertising and sales promotion for the agricultural division of the Chas. Pfizer & Co., Inc., New York, according to J. Jerome Thompson, company vice president and general manager of the agricultural division. Mr. Manley joined Pfizer in 1953 and became sales promotion manager of the agricultural division about a year ago. Before joining Pfizer he was assistant advertising manager with the chemical and dye division of Allied Chemical and Dye, and with Standard Brands, Inc., as a market analyst. Mr. Thompson said Mr. Manley will be responsible for all advertising, sales promotion and merchandising of the company's extensive line of agricultural products.

### Reader Comments on Recent Croplife Editorial

To the Editor:

It was interesting to find myself, along with many thousands of other sincere friends of the farmer, labeled a "traditionalist" in one of your August 4th editorials. Are you confusing your terms? American history will show it to have been "traditional" to ignore the farmer and his welfare. The battles of the 20's were fought against this attitude by the very folk you are now applying the traditional label to in a disparaging manner.

"Lower the price supports on corn, cotton and rice" you say. Mr. Benson's "march to agricultural sanity" has made him "a strong man in the GOP hierarchy and nowhere is he stronger than in the urban areas." Well, bully for Benson—sacrificing the farmer's welfare to the glory of the GOP and the well-fed, high-paid city dweller! And three cheers for his "stable agricultural economy, resting squarely on a foundation of security!"

What in the world are you trying to tell the farmer in that last statement? And whom is Mr. Benson representing in Washington—the GOP and the urban dweller? And in whose interest is the Farm Bureau lobbying in the halls of Congress? The policies espoused by them are preposterous from the farmer's standpoint—and support for them from a journal directed at suppliers of the farm market is difficult to understand.

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## Fertilizer Tonnage In California Up At Fiscal Year End

SACRAMENTO, CAL.—Tonnages of fertilizers reported in California during the 1957-58 year were 43,487 tons over the previous year, according to a report just issued by Robert Z. Rollins, chief of the bureau of chemistry, State Department of Agriculture. Comparative total figures were 1,123,235 tons for 1957-58 against 1,079,748 tons for the previous fiscal year.

Of this total, mixed fertilizers accounted for 237,216 tons in the period just ended, as compared to 221,915 tons the previous year.

Materials accounted for the remainder, with ammonia solution (20-0-0) sales amounting to 202,742 tons this year, marking a greater tonnage than any other material. This figure, however, was down somewhat from the 219,237 tons recorded in the 1956-57 year.

Tonnages of ammonium sulfate went up from 152,286 tons in 1956-57, to 175,048 tons in 1957-58.

Increases were also noted in anhydrous ammonia, from 70,864 tons to 79,209 tons; in ammonium nitrate solution, from 22,597 tons to 27,505; in urea from 21,769 to 22,306 tons; and in calcium nitrate, from 29,956 to 30,266.

Ammonia-ammonium nitrate solution (40-0-0) made a significant increase from 6,998 to 14,942 tons.

Liquid mixed fertilizers likewise registered a considerable increase in tonnage, from 66,045 to 74,880 tons.

Of the mixed dry fertilizers, 10-10-10 was most popular, and also showed a substantial increase over last year's total. The figures were 23,459 tons for 1956-57 and 27,620 tons for 1957-58.

The total of agricultural minerals used in California decreased somewhat during the 1957-58 year. The totals were 829,890 tons for last year and 814,541 tons this year. By far the most voluminous tonnages were in gypsum, of which 713,918 tons were used in the 1957-58 year. Still, this was a reduction from the 722,872 tons recorded in California last year.

Fertilizer tonnages were also looking up during both the second quarter of 1958 and the first half of this year as compared to similar periods of 1957.

Mixed dry fertilizers made a significant increase during the first half of 1958, totaling 152,748 tons as compared to 135,815 tons in the first six months of 1957.

The total tonnage of commercial fertilizers sold in California for the first six months of 1958 amounted to 679,577 tons, as compared to 663,484 tons in the first six months of 1957.

## Formula Evolved for Predicting Corn Yields

KNOXVILLE, TENN.—An agronomist and an agricultural economist have come up with a method for predicting corn yields. W. L. Parks, University of Tennessee agronomist, and J. L. Knetsch, TVA agricultural economist, say that a formula that combines the pounds of nitrogen per acre and an index value for drouth can be used to predict corn yields.

The drouth index is obtained by studying how much rain has fallen in the area during the year and at what stage of growth of the corn plants the rain fell. High levels of phosphate and potash must be maintained in the soil in order for the formula to work, the scientists explain.

Available climatological records enable drouth histories to be determined for any given area. This information—along with moisture-holding characteristics of the soil and depth of rooting—permits expected corn yields

at given levels of nitrogen to be determined, they say.

Knowledge of probable yields under the conditions in particular areas may be used to look into yield uncertainties and to find the best rates at which to apply nitrogen fertilizer on corn. The study was carried out on a Lintonia soil at several rates of nitrogen during 1955, 1956, and 1957, and corn yields ranged between 17 and 138 bushels per acre.

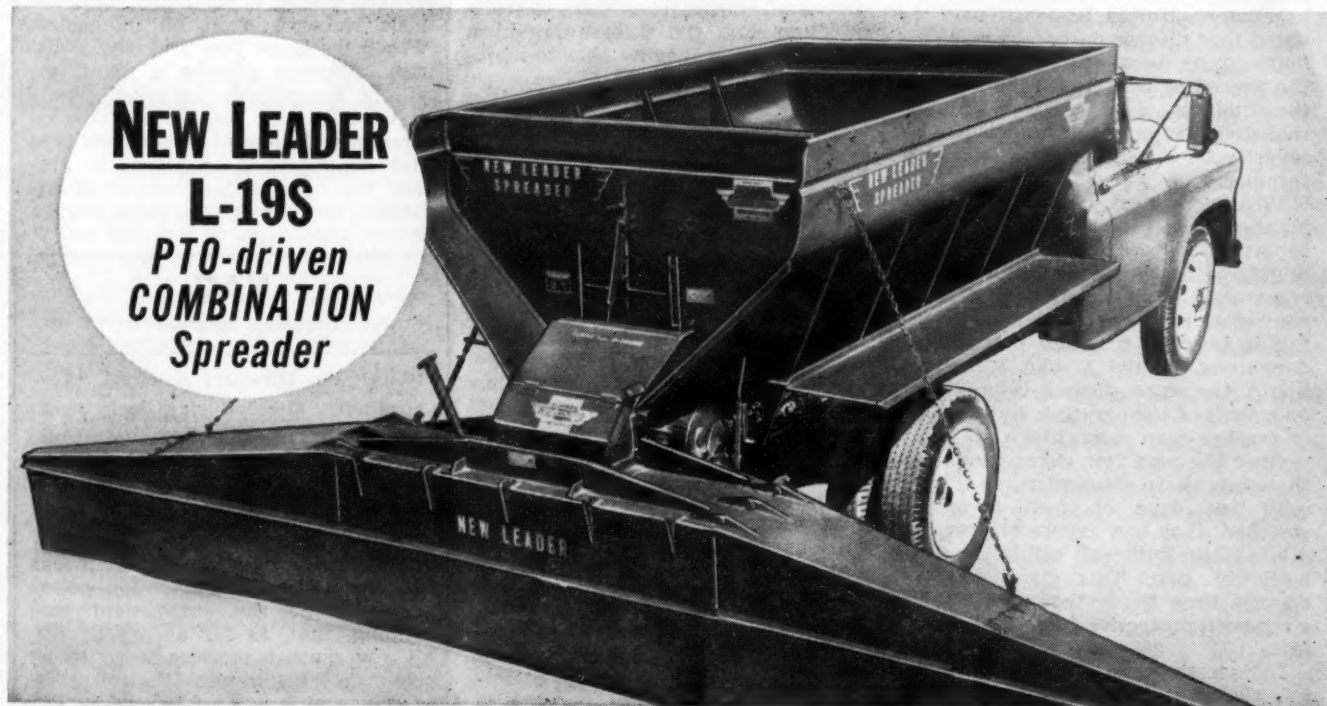
## Wyoming Farmers, Ranchers Plant 208,150 Trees

LARAMIE, WYO.—Wyoming farmers and ranchers planted 208,150 trees this spring and summer as windbreaks or to control soil erosion, according to Leon Paules, University of Wyoming agricultural experiment substation supervisor, and Lloyd Ayres, extension forester. The substa-

CROPLIFE, Aug. 25, 1958—7

tion distributed the trees; the extension service promotes tree planting and provides information on starting and maintaining shelterbelt and erosion-control plantings.

The 1958 planting brings the total to 4,132,000 trees planted in Wyoming since the Clarke-McNary program started in 1927. Under the program federal and state appropriations bring the price of the trees down nearly to cost.



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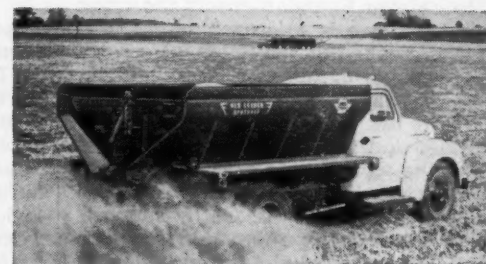
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## PHYTOPATHS

(Continued from page 1)

cooperative effort was triggered by the late blight epidemic of 1946, which practically wiped out the commercial tomato crop of the South—a \$40 million loss. The service has grown as plant pathologists have been able to learn the causes of disease outbreaks.

As an example, Dr. Miller pointed out the research development of predicting bacterial wilt of sweet corn in Eastern United States. Scientists noted that disease outbreaks were influenced by temperatures registered the preceding winter. On the basis of the mildness of winter weather, pathologists are now able to predict the severity of the disease the following summer.

Weather is a critical factor in most plant disease forecasting, Dr. Miller reported. In predicting potato late blight in the Northeast, for example, research has shown that a definite combination of cool weather and rainfall is required to make this fungus dangerous. In the Middle West and South, the same disease is predicted on a basis of temperature and humidity (rather than rainfall).

Over the past few years, plant pathologists have demonstrated that with ten days of such favorable weather, they can accurately predict a late blight outbreak within the next week or two. This gives growers enough time to dust or spray their vines with protective fungicidal chemicals.

In assessing the accumulated knowledge of the fungus that causes late blight of potatoes, M. E. Gallegly of the University of West Virginia and J. S. Niederhauser of the Rockefeller Foundation told the group that science is approaching its ultimate goal—the development of potato plants immune to late blight infection.

Late blight is a major disease of potatoes and tomatoes almost throughout the world, they said. At least 10 countries—including the United States—fight the disease by supporting organized warning services that predict late blight outbreaks in time for farmers to protect their crops with chemical dusts and sprays.

The annual bill for chemicals, control equipment, and labor may run as high as \$20 million. Even so, the disease probably takes 10% of the United States potato crop, costing growers and processors nearly \$70 million a year.

A. F. Ross of Cornell University, authority on virus diseases of plants, reported that the end target of plant pathology—ways of preventing and controlling diseases—will be best served by greater attention to interactions of disease-producing organisms. He added that in the field of virus diseases, interaction between viruses is not a rarity.

That the time may not be far hence when farmers may save diseased crops with timely chemical treatments was pointed out by Dr. A. E. Dimond, chief of the division of plant pathology and botany of the Connecticut Agricultural Experiment Station, New Haven. As evidence of these future possibilities, he cited experiments in which therapeutic chemicals had been used to control rust disease of wheat, blight and mildew on beans, and blue mold on tobacco.

This trend, he said, is a boon both to mankind and science. Practical plant chemotherapy is destined to give man greater control than ever before of the myriad diseases that destroy crops and nursery plants. "In addition," he added, "it will help plant disease scientists to discard some of the dogmas that have grown up during the past half century."

Classically, plant pathologists have stressed the importance of striking at the weakest link in the life cycle of disease-causing organisms. "The development of chemical therapy," Dr. Dimond said, "sug-

gests that the weak link is not a characteristic of diseases, but is, rather, a characteristic of the level of technical skill of plant pathologists.

"We have encouraged growers to rotate crops to rid the soil of an established disease organism. Tomorrow, we may treat plants with a compound that permits them to resist infection, and the disease organism may then no longer be able to maintain itself in the soil."

Dr. Dimond encouraged his fellow scientists to speed the advance of plant chemotherapy by heightening their search for chemical compounds with systemic qualities—the kind that are absorbed into, and move through the plant to "lie in wait for the disease organism when it enters."

The groundwork has been effectively laid by research during the past 15 years. The development of systemic agricultural chemicals—specifically, insect and weed killers—was a first step; the development of antibiotics, a second. Certain antibiotics already have been shown to destroy several bacterial and fungus plant disease organisms. There has been some success in experiments with antibiotics against virus plant diseases.

**Systemic or "translocatable" qualities are essential to chemotherapeutants, Dr. Dimond said. In addition, such therapeutant chemicals should be low in toxicity to plants, and should offer no chemical residue problems when the treated plants are used as food or feed.**

Another speaker on the subject of chemotherapeutants, Dr. S. H. Crowdy, Imperial Chemical Industries, Ltd., Berks, England, said that the major physical obstacles to the broadscale application of chemotherapy, is the absorption of chemicals into and their diffusion within plants. The most logical path for chemicals to follow when entering plants is through the roots, but this method is somewhat overruled by economic considerations.

"As a result," Dr. Crowdy said, "chemotherapeutants are being and will continue to be applied to plant foliage." However, this is not a normal function of plant leaves to take up chemicals from their surfaces, and furthermore, chemical sprays tend to dry out before much chemical can be absorbed.

Continuing, Dr. Crowdy pointed out that mere absorption does not guarantee diffusion within the plant. He said that diffusion is a problem of chemical translocatability; of finding chemical compounds with qualities that cause them to move, or to be moved, through plants.

Good progress has been made to improve leaf absorption of chemicals by adding wetting agents to increase the life of the spray film, the British scientist said. The addition of glycerol to certain chemotherapeutants, for example, extends the time during which absorption can take place. In a typical case, about 20-30% of a chemical applied to leaf surfaces was absorbed over a period of five hours. When glycerol was added, absorption extended over 24 hours, and about twice as much chemical was absorbed, he said.

Other research has demonstrated that rate of uptake of chemicals by plants can be increased by the addition of plant growth regulating hormones, such as gibberellic acid.

Perhaps the bigger problem is chemical diffusion within plants, Dr. Crowdy said. So far, there are few scientific standards to guide the research worker. Some chemicals are diffused or translocated readily by one plant; not at all by another. For example, streptomycin is translocated by tomatoes, but not by broad beans.

Sulfonamides are absorbed by leaves, but do not move within the leaf. Streptomycin moves from the base to the tip of the leaf. Still other chemicals, like 2,4-D, are translocated from leaves, through the plant, and out of the roots into the soil.

An Australian plant disease scientist, Dr. N. T. Flentje, told the phytopaths that finding out how to protect plants from diseases must be based on knowing more about how diseases attack plants. The speaker, head of the department of plant pathology at the University of Adelaide, said that basic research must be intensified. "When we know how and why a disease organism attacks a plant, we will be better able to breed plants that resist the disease or develop chemicals of the growth hormone type that can be used on plants to prevent the normal development of attacking organisms," he said.

## NAC

(Continued from page 1)

tions," Mr. Hitchner declared. "Accordingly, the industry feels that the costs of the administration of the law by the Food and Drug Administration should be a regular part of their operational expenses."

Mr. Hitchner remarked that it was the announced administration policy at the time the amendment was pending, that, as far as practicable, all government services were to be self-supporting through the collection of fees, and it was on this basis that the fee provision was inserted into the legislation. Such a government-wide program has not been put into effect. Proposed legislation introduced last year by the Food and Drug Administration, covering chemicals used in or on food, provides for no comparable fee system to cover administration of the law.

"In view of the above and due to the fact that industry looks upon these fees as an additional 'tax on doing business,'" Mr. Hitchner concluded, "The National Agricultural Chemicals Assn., as spokesman for the pesticide industry, proposes to seek an amendment to the law which would eliminate fees charged for the establishment of a tolerance."

## Fertilizer Round Table Discussions to Revolve Around Economics of Production

WASHINGTON — The general agenda of the Fertilizer Industry Round Table meeting scheduled for Nov. 5-7 at the Mayflower Hotel, Washington, has been announced by Dr. Vincent Sauchelli, chairman. Dr. Sauchelli, chemical technologist for the National Plant Food Institute, will open the sessions with a brief review of the meeting and a presentation of the topics to be covered in the current series.

Theme of Wednesday morning, Nov. 5, will be "Economics of Preventive Maintenance," which will be covered in the answering of ten questions concerning this phase of the fertilizer industry. Speakers yet to be announced will discuss the engineering principles governing maintenance, Dr. Sauchelli said.

The afternoon session will be devoted to a discussion of problems relating to the day's theme of preventive maintenance. This discussion will feature the participation of experts in the field.

The announced theme of Thursday, Nov. 6, is "Economics of Processing." Some fourteen questions concerning this phase of the fertilizer manufacturing industry will be answered in the discussions led by G. F. Sachsel.

## New Antibiotic Shows Up Well in Tests

BERKELEY, CAL.—A new experimental antibiotic called "GS1" scored high against plant-attacking fungi in laboratory and greenhouse tests conducted recently at the University of California.

P. A. Ark, plant pathologist of the Berkeley staff, and visiting Dutch scientist J. Dekker tested the new substance in the laboratory and found that GS1 could act effectively against some fungi at concentrations as low as one part in 10 million. In the greenhouse, GS1 provided good control of cucumber scab and brown rot of apricots. It also proved effective on cucumbers against downy mildew, a fungus disease that's a problem on many cultivated plants.

Continuing their experiments, Mr. Ark and Mr. Dekker found that a 24-hour soak in GS1 solution could protect squash seeds against a seed-borne fungus, *Fusarium solani*. A similar soaking treatment provided pea seeds with a defense against another seed borne blight, *Ascochyta pisi*.

The new antibiotic, under development by Charles Pfizer & Co., had no harmful effects on seed germination or plant growth, the researchers reported. Although it showed off well in the laboratory and greenhouse, GS1 must still undergo extensive field testing before it can be recommended for commercial crop application, the university scientists said.

## Horticulturist Honored

BERKELEY, CAL.—J. C. Johnston, retired horticulturist who has served the University of California for the past 36 years, has been honored by members of the lemon industry.

Mr. Johnston was given the Lemon Men's Club annual award of honor at a recent meeting in Fillmore, Cal., of the group, "to show the industry's appreciation and recognition of his outstanding contributions to the successes of the citrus industry." Bruce Mills, Ventura County citrus grower, presented the award.

As assistant farm advisor in Tulare County, Mr. Johnston aided in the discovery that a lack of zinc in citrus causes mottle leaf and low yield of fruit.

Responsibilities of the plant superintendent in plant operation time tables will be covered by the speakers of the day, with added discussions by selected members of the Round Table on questions and problems pertinent to the theme of the day.

In the afternoon, W. F. Jacobi, Union Bag-Camp Paper Corp., will discuss the problems involved in bags and bagging of materials, with other members of the Round Table participating in the discussion.

The session of Friday, Nov. 7, will continue with a new theme, the "Economics of Formulation." Frank T. Nielsson will be the discussion leader, guiding a question-and-answer period on "Principles Governing Economics of Formulation."

Dr. Sauchelli says that a short business meeting will be inserted in the program. A total of about 40 questions on operational problems asked by Round Table members, will be discussed by men "whose experience and knowledge assure worthwhile, useful information," Dr. Sauchelli points out.

He added that this year's Round Table provides more time for discussions from the floor and for visiting between sessions to gather more information from fertilizer experts.



## Adequate Advertising, Providing News Tips Lead to New Business for Fertilizer Dealers

By Al P. Nelson  
Croplife Special Writer

**EDITOR'S NOTE:** This article spells out in detail the methods which a fertilizer dealer can use in getting his advertising program to a level where it will do the best selling job for him. Also outlined are ideas for achieving valuable newspaper publicity. The suggestion for an advertising scrapbook is strongly advised by the author. Following issues of Croplife will explain in detail how some progressive fertilizer retailers are handling their advertising programs.

When it comes to advertising, the fertilizer dealer is in a fortunate situation. Newspapers and magazines appear very willing to give publicity to many facts and figures about fertilizer, farm chemicals and application techniques because these subjects are relatively new to agriculture to the extent they are now being used. Therefore this newness means that these products and their uses constitute news, especially in the eyes of the average weekly and daily newspaper editor.

Visits with more than 200 fertilizer and farm supply dealers in various sections of the U.S. concerning their advertising and publicity problems reveal figures and data which might prove helpful to the dealer who is interested in advertising.

Fertilizer dealers as a rule do not spend a recommended 2% of the previous year's gross volume on advertising. Many other retailers selling other lines of merchandise do spend 2% to 3%.

The fertilizer dealer does not do so, because his gross margin on fertilizer is usually below that of the retailer who gets 40% to 50% markup on cost. If the fertilizer dealer does spend 2% on advertising and must still meet competitive discounts, handling, hauling and other costs, he usually has a farm supply store in connection with his fertilizer business. In the latter case he carries farm appliances, feeds, sprayers, and other related merchandise, some of which carry a 40% markup and thus can absorb some of the dealer's advertising cost.

Fertilizer dealers interviewed advertise in weekly newspapers at rates which vary from about 45¢ per column inch to about 85¢ per column inch.

Some dealers also advertise in daily newspapers at rates from 85¢ to \$1.50 per column inch.

Some also advertise in regional county farm magazines at from \$1 to \$3 per inch.

Quite a number have their own mimeograph duplicating machines and have regular issues to the farm trade.

Some have monthly printed bulletins which they issue to the trade. Some also use single sheet printed bargain specials.

Some like postcard mailings.

A very small percentage of fertilizer dealers use billboard advertising. More could profitably use such advertising.

A few also use theater screen ad-

vertising, especially in small towns. Too few use truck advertising on panels. This is a neglected field.

Only a small percentage of those interviewed took the trouble to have fertilizer signs placed on farmlands where they furnished fertilizer. This is another neglected, high return field.

Very few took booth space at county and 4-H fairs where farmers congregate.

A surprising number of fertilizer dealers, however, own slide projec-

tors and show color movies of fertilized fields to customers.

Why don't fertilizer dealers pay more attention to the importance of advertising?

Here are the reasons as shown in surveys:

1. Advertising is something the busy dealer can cut off, with no seeming ill effects for a while. If a dealer wants to do business daily, he must stick a key into the front door lock to "open up" for the day.

But he need not take such definite action on advertising. He can either

### SHOP TALK



## OVER THE COUNTER

By Emmet J. Hoffman  
Croplife Marketing Editor

Much discussion and even controversy—some mild, some heated—have resulted from inroads made by vertical integration in agricultural production.

One of the most recent observations on this trend is also one of the most intriguing. It is the observation of Prof. N. S. Hadley, Purdue University agricultural economist, who believes that vertical integration may be a fad.

Prof. Hadley recalls that "15 years ago we had a great fad discussing grassland agriculture. Grassland farming had an impact on our thinking and our way of doing business, but it did not revolutionize agriculture," he points out.

"During the last five years we have had a lot of talk about meat-type hogs and it has influenced us. It has speeded progress and resulted in change, but not a revolution."

The economist places vertical integration in such a category—it will bring about changes, stimulate progress but will not greatly change the ownership and management of individual farm businesses.

Prof. Hadley says "control of agriculture will be gained and retained by those who can supply management most effectively and efficiently. The farmer will be best able to perform this function, but he must be well educated, well informed and an extremely capable manager. He must be well-financed and specialized in one or a few enterprises. He must be an expert in buying supplies and selling products. Control and management of the production phase of farming are likely to remain in the hands of the individual farm operators for these reasons.

"Many phases of farming are still largely arts. No formula can be written to insure their success. Much of their success depends on day-to-day, on-the-spot judgment."

Prof. Hadley said that with few exceptions, farming is a business of dispersed labor force. Gang labor cannot be utilized. Supervision is difficult and costly.

"There is little advantage in integrating the production of field crops. There is a high degree of complemen-

tary relationship between crop and livestock production," he said.

"The farms will be in the hands of competent managers.

"Many people will be willing to work for themselves for somewhat less than they would for someone else. This is a price that most of us are willing to pay for a degree of independence."

### USDA Gives Attention To Vertical Integration

Official note has been given by the U.S. Department of Agriculture to the rapid developments in the field of vertical integration.

Ezra Taft Benson, secretary of agriculture, comments in a foreword to a recent bulletin on contract farming and vertical integration:

"Contract farming and other forms of vertical integration are among the most potent forces in our agriculture today. . . .

"Integration may vitally affect the role of farmers in our agricultural economy by shifting to others their responsibilities as managers. . . .

"The next decade will bring more integration to agriculture. I am concerned that farmers themselves reap the rewards of integration. . . .

"Farmers themselves can largely determine the extent to which their management decisions are controlled by other firms. If farmers continually seek to improve their production and marketing methods and the quality of their products, there will be less need for contract farming. . . .

"The usefulness of federal and state marketing agreements and orders can be increased. . . ."

write some copy today, or not write it, depending on how busy he is. He very seldom sits down, maps out a definite program for the year and writes ads for several weeks ahead. He should do it, but he always finds something in his business which needs more attention now, or so he thinks.

What the fertilizer dealer often forgets is that when he takes the time to work out a consistent ad program, that advertising is working for him every day. It's a silent salesman, a persuader that never sleeps so long as there are "eyes open to see," and "ears to hear."

The dealer who neglects advertising is passing up sales.

2. Most fertilizer dealers are "mood" advertisers. When business is good they think they do not need to advertise. When business is "poor" they get panicky and spend too much, too quickly to try to stimulate business.

The average fertilizer dealer can tell how long his bulk fertilizer trucks will last at the current rate. He can tell how much it costs to operate those trucks per mile and how many miles are covered annually. These are vital facts the dealer needs to know and use in his business calculations. But very few dealers have vital statistics about advertising and its effect upon customers, its duties and functions. If the dealer took the time to study advertising in all its forms, he would benefit immeasurably, because he has a wonderful story to tell customers.

Let us take John Jones, a typical fertilizer and farm store dealer in a small town of 1,000 population. What can he do about advertising so that it becomes a sharper, business building tool for him?

Here are a few recommended procedures:

1. Lay out a map of the territory in which you do business, an area to which you can give reasonably good service.

2. Take this map to your local newspaper publisher. Get his circulation for that territory. Make a note of it. Get his best rates on a volume space basis used over the period of a year. This is often much lower than buying your ad space piecemeal now and then. This latter practice always carries a higher rate.

Ask this publisher what good space locations he has open. Ask him if he will receive tips and write them up on various outstanding fertilizer practices. "Put ideas for articles" into his head. That's part of your job, too. Sell him on the idea that farmers are achieving greater prosperity through use of the right kind of fertilizers.

Ask him to show you all the fertilizer mats he has in his mat catalogs. Ask him for suggestions for ads for such events as special sales, anniversaries and seasons. Get him working for you. Get him thinking of your business.

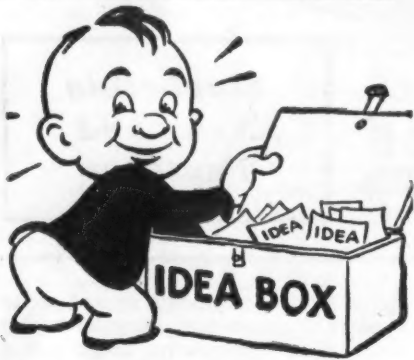
Ask for extra free copies of the newspaper every week so you can post your ads in your store at several places. This is good publicity for the local editor, too.

3. Visit or write local farm magazines, shoppers' guides, radio and television stations that cover your specific trade area. Get their circulation figures, audience estimates, rates and services.

Then go back to your office and spend some time going over all this data. Decide how much you will spend for advertising in the coming year and where the money will go. Most of it should go to the mediums

(Turn to ADVERTISING, page 11)





## What's New...

In Products, Services, Literature

You will find it simple to obtain additional information about the new products, new services and new literature described in this department. Here's all you have to do: (1) Clip out the entire coupon and return address card in the lower outside corner of this page. (2) Circle the number of the item on which you desire more information. Fill in your name, your company's name and your address. (3) Fold the clip-out over double, with the return address portion on the outside. (4) Fasten the two edges together with a staple, cellophane tape or glue, whichever is handiest. (5) Drop in any mail box. That's all you do. We'll pay the postage. You can, of course, use your own envelope or paste the coupon on the back of a government postcard if you prefer.

### No. 6785—Crop Dusting Brochure

Transland Aircraft, division of Hi-Shear Rivet Tool Co., is making available an eight-page brochure and describes the new "Swathmaster" for crop dusting and spraying aircraft. The "Swathmaster" is claimed to be the only dispensing unit available for the aerial application of both dry and liquid materials to farm and forest lands. Fully illustrated, the brochure explains the economic advantages, flight and applying performance, suitable aircraft, how it works and installation details. A copy of the brochure may be secured by checking No. 6785 on the coupon and mailing it to Croplife.

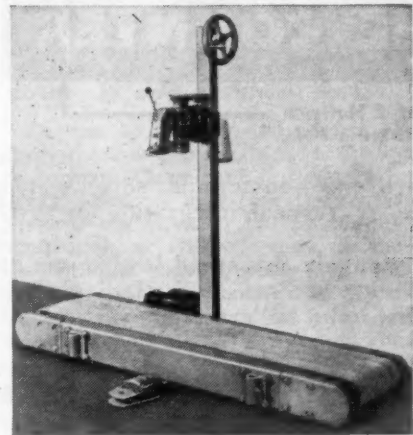
### No. 6790—Coding Wheel

A new addition to Mill Engineering Company's line of tag dispensing and coding equipment is the "Quick Change Coding Wheel." The change is accomplished by metal code holders into which are placed the logo-type. The new coding wheel contains three holders for the metal strips, thereby making it possible to print three types of information simultaneously. The bag tagger automatically dispenses the tag into the sewing machine for each bag and the

coder accessory prints code and other information on the tag simultaneously. Full information will be supplied to those interested. Check No. 6790 on the coupon and mail it.

### No. 7143—Belt Conveyor Bag Closer

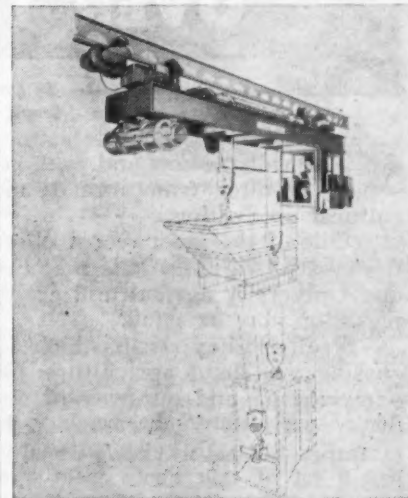
The Dave Fischbein Co. has announced the introduction of a new belt conveyor sewing unit, the "Fischbein Bag Closer model B-5." The unit operates from one 110-volt light outlet. No special wiring is necessary. The two-stage switch operation is controlled by foot pressure by the op-



erator. The first stage starts the movement of the conveyor belt to carry the bag to the sewing head, and the second stage starts the sewing operation. The machine stitches at the rate of 30 ft. per minute. Check No. 7143 on the coupon the mail to secure details.

### No. 7145—Hoist Carrier

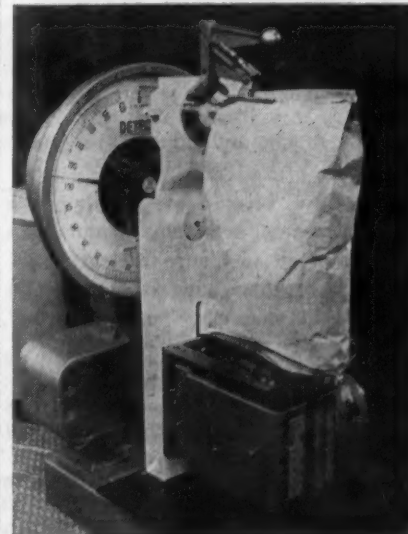
A cab-controlled twin-hook hoist carrier provided with an auxiliary hoist for dumping has been built by the Cleveland Tramrail Division, the Cleveland Crane & Engineering Co. Of weatherproof construction for outdoor service, the unit will pick up



tote boxes of materials, haul them and empty by tipping. While the carrier was especially designed for handling slag in a steel mill, it is suitable for various bulk materials. Check No. 7145 on the coupon and mail it to this publication.

### No. 7152—Settler Packer Attachment

An attachment for bag packers which is designed to settle material in the bag during the entire filling cycle without affecting the weighing mechanism of the packer has been announced by the H. L. Stoker Co. The model "B" settler features ad-



justments to control the intensity and frequency of the settling action to meet the physical characteristics of most packaged materials. It can be installed on all models of Stoker packers and, with slight modifications, may be adapted to most other makes of packer now in service. Further information is available by checking No. 7152 on the coupon

## Also Available

The following items have appeared in the What's New section of recent issues of Croplife. They are reprinted to help keep retail dealers on the regional circulation plan informed of new industry products, literature and services.

### No. 6789—Orchard Air Sprayer

A new line of orchard air sprayers, designed to handle spraying needs of both small and large orchards and groves, has been introduced by the



F. E. Myers & Bro. Co. The new line, offered in a 224 series and 232 series (pictured) has been field tested in application of dilute, semi-concentrate and concentrate chemicals for control of fruit pests, insects and diseases, without sacrifice to tree vigor or fruit finish. The sprayers have been designed for uniform application of all chemical solutions presently used in orchard and grove spraying. Even highly corrosive spray chemicals can be applied without damage to the sprayer, because of special manufacturing processes, it is claimed. The new sprayer line consists of five basic units, with many interchangeable parts to minimize service and replacement requirements. The 224 series air sprayer has been designed to give the advantages of air spraying to growers with small or medium-sized orchards and groves. The sprayer can be used to apply concentrate and semi-concentrate spray materials. The 224 series is available in either 300- or 400-gal. tank sizes. It features a high pressure 20-gal. a minute pump with a 400-lb. operating pressure. The material is distributed by a direct drive fan. Secure details by checking No. 6789 on the coupon and mailing it to Croplife.

### No. 6778—"Vapam" Folders

New literature—consisting of color folders—has been prepared by the Stauffer Chemical Co. describing the use of its product, "Vapam" to control weeds, fungi, nematodes, symphyla and certain soil insects in vegetables, flowers, shrubs and on turf. Directions for use are also available. Check No. 6778 on the coupon and mail it to secure details.

### No. 6777—Peanut Movie

A 67-frame, sound color slide film, "More Profits from Peanuts," is available from the United States Gypsum Co. Available for showings on request, the film may be used either with a 33 1/3 r.p.m. record or script. It explains the uses and advantages of gypsum in growing peanuts. Secure details by checking No. 6777 on the coupon and mailing it to Croplife.

### Send me information on the items marked:

- |  |  |
|--|--|
| <input type="checkbox"/> No. 6777—Peanut Movie       | <input type="checkbox"/> No. 6787—Spreader-Activator |
| <input type="checkbox"/> No. 6778—"Vapam" Folders    | <input type="checkbox"/> No. 6788—Hand Sprayer       |
| <input type="checkbox"/> No. 6780—Soil Fumigation    | <input type="checkbox"/> No. 6789—Orchard Sprayer    |
| <input type="checkbox"/> No. 6781—Fiber Glass Booms  | <input type="checkbox"/> No. 6790—Coding Wheel       |
| <input type="checkbox"/> No. 6782—Insecticide        | <input type="checkbox"/> No. 7046—Vibrators          |
| <input type="checkbox"/> No. 6783—Compacting Process | <input type="checkbox"/> No. 7111—Checkweigher       |
| <input type="checkbox"/> No. 6784—Product Cans       | <input type="checkbox"/> No. 7143—Bag Closer         |
| <input type="checkbox"/> No. 6785—Crop Dusting       | <input type="checkbox"/> No. 7145—Hoist Carrier      |
|  | <input type="checkbox"/> No. 7152—Settler            |

(PLEASE PRINT OR TYPE)

NAME .....

COMPANY .....

ADDRESS .....

CLIP OUT—FOLD OVER ON THIS LINE—FASTEN (STAPLE, TAPE, GLUE)—MAIL

FIRST CLASS  
PERMIT No. 2  
(Sec. 34.9,  
P. L. & R.)  
MINNEAPOLIS,  
MINN.

BUSINESS REPLY ENVELOPE

No postage stamp necessary if mailed in the United States

POSTAGE WILL BE PAID BY—

Croplife

P. O. Box 67

Reader Service Dept.

Minneapolis 1, Minn.



## No. 6783—Compacting Process

A compacting process for fertilizer has been announced by the Allis-Chalmers Manufacturing Co. The system uses compacting, granulating and screening equipment to transform once discarded salt fines into effective fertilizer particles, applied in the field with A-C fertilizer attachments such as the one shown here. The mechanical compacting system is in production in several plants in potash, coke-oven ammonium sulfate, diamonium phosphate, sodium nitrite and carbon areas. Common to these producers of inorganic salts has been the unavoidable production of finely divided particles which break off or fly away before they are available for use as fertilizers. In the A-C process, these fines are fed into a com-



pacting mill where they are squeezed into a continuous sheet. Broken into chunks, the product is then granulated to marketable size in a roller mill. Screens assure removal of undersized and oversized particles. Check No. 6783 on the coupon and mail it to secure details.

## No. 6782—Livestock Insecticide

A new livestock spray insecticide called Co-Ral is described in detail in a six-page folder prepared by the Chemagro Corp. The folder contains information and test data on the effectiveness of the new spray material against cattle grubs, screw-worms, hornflies, lice and ticks. The life cycle of cattle grubs and screw-worms are shown along with spray application instructions for the use of Co-Ral against all major livestock insects. The product, researched as Bayer 21/199, has recently been registered by the U.S. Department of Agriculture for use on beef cattle, horses, sheep, swine and goats. The folder may be secured by checking No. 6782 on the coupon and mailing it to Croplife.

## No. 6788—Hand Sprayer Literature

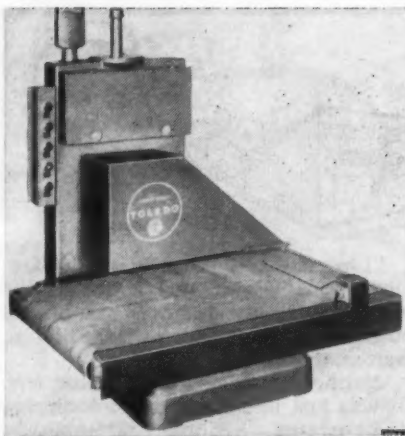
The B & G Co. has produced a descriptive folder and price folder for its hand sprayers. Sprayers from the ½-gal. size on up to the 2-gal. size are described. Various accessories such as nozzles, tip assemblies, valves, pump units, carrying straps and repair boxes are also described. Check No. 6788 on the coupon and mail it to secure details.

## No. 6787—Spreader-Activator

A folder titled "Colloidal X-77 Spreader-Activator" for use with herbicides, insecticides, fungicides and acaricides has been published by the Colloidal Products Corp. Colloidal X-77 is water soluble and the folder lists its characteristics which make it suitable for various farm chemicals. Check No. 6787 on the coupon and mail it to secure the folder.

## No. 7111—Automatic Checkweigher

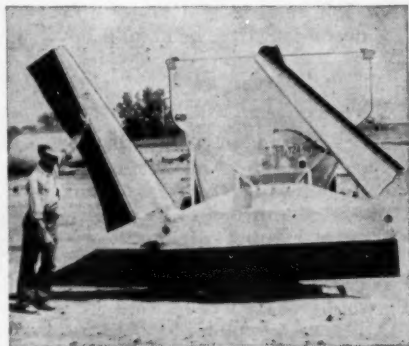
A new higher capacity "Toledo" automatic checkweigher, designed to govern uniformity and control costs by maintaining a constant check of items passing over the unit, has been announced by Toledo Scale, Division of Toledo Scale Corp. The unit, iden-



tified as a model 9460, is capable of handling packages or bags weighing between 25 lb. and 200 lb., with an accuracy of .1%, it is claimed. Equipped with a belt-type motorized conveyor weigh section, items pass over the unit at a rate of approximately 20 per minute and are checked "on the run" against a predetermined weight. Check No. 7111 on the coupon and mail it to secure details.

## No. 6781—Fiber Glass Booms

New outer booms—or hoods—of fiber glass have been added as optional equipment on the Simonsen fertilizer spreader, it is announced by Simonsen Manufacturing Co. The new swing-out hoods are nearly 100 lb. lighter than those that have been standard on the fertilizer spreading unit, it is claimed. Fiber glass is not subject to corrosion by fertilizer material or rusting from the weather. Other advantages claimed for the fiber glass booms are that they require no painting and are easier to raise and lower because of their lighter weight. The fiber glass hoods



are designed to spread fertilizer evenly over a 23 to 24-ft. width of soil with one central distributor fan. They are hinged to swing up behind the truck box when not spreading fertilizer, and rubber bumpers reduce flopping when they are down. No chains are needed to hold up the hoods and they require no internal bracing. Check No. 6781 on the coupon and mail it to secure details.

## No. 6784—Product Cans

An illustrated, two-page bulletin to help the packager of dry, semi-liquid or liquid products select a can for these products has been issued by George D. Ellis & Sons, Inc. Thirty eight different types of cans are shown in the bulletin, called product memo No. 112, and they are broken down into three different categories: Round cans, round cornered square cans and round cornered rectangular cans. Check No. 6784 on the coupon and mail it to secure details.

## No. 6780—Soil Fumigation Brochure

How soil fumigation can be used to rid soil of weed seeds, diseases and such soil pests as nematodes, is outlined in a new eight-page brochure published by the Stauffer Chemical Co. Profusely illustrated, the brochure describes the most effective methods of application which have been developed by the firm's field studies of the soil fumigant, "Vapam." Included are photographic descrip-

tions of simple application techniques by rotary tiller, soil injection, overhead sprinkler irrigation, hose proportioner and basin flooding. The advantages of soil fumigation in nurseries, orchard sites, vegetable acreage and plant beds are discussed. Copies of the brochure are available without charge. Check No. 6780 on the coupon and mail it to Croplife and receive the brochure.

## No. 7046—Vibrators

The Cleveland Vibrator Co. has available literature showing the use of "air-cushioned" vibrators which are said to reduce noise by "cushioning the vibrator piston's thrust. A small amount of air is released ahead of the piston," the company explains. "This air creates a buffer as the piston moves back and forth, reducing noise to a minimum," it is claimed. Check No. 7046 on the coupon and mail it to secure details.

## ADVERTISING

(Continued from page 9)

where you'll get the most business.

Here is the way one fertilizer dealer's 1¼% advertising budget goes:

65% to weekly and daily newspaper advertising.

15% for direct mail (postage costs are now higher on this).

10% radio spot announcements.

10% miscellaneous. This includes sales promotion events, billboard advertising and some theater advertising.

How does your own advertising budget shape up alongside this actual budget?

Among the dealers interviewed, most spend between 50 and 70 percent of their entire advertising budget on newspaper advertising, with direct mail and radio advertising next in order.

Could this high percentage of newspaper volume be due to the fact that good newspapers are read regularly, because they contain much timely news, because reading them has become a habit, and because advertising managers of newspapers call regularly on merchants to try to sell advertising?

Decide for yourself whether your local newspaper is doing the best job covering the most prospects and customers for your business and doing the best job interesting the readers.

4. Now that you have rates and circulation figures before you, begin to collect samples of advertising of other fertilizer dealers in other areas. Your newspaper editor receives exchange copies of weekly and daily newspapers for miles around. He reads such papers sketchily, then throws them in the wastebasket.

Ask him to save 50 or more such exchange newspapers from other localities for you. Look through them. Study the fertilizer firm ads. Clip those that are interesting. Clip samples of fertilizer publicity published.

Make a file. A lot of those fertilizer ads will give you ideas for copy of your own. Some fertilizer dealer 100 miles distant may use a dandy ad idea that you can use, too. Culling these exchange newspapers can give you a wonderful scrapbook of ideas.

5. Ask your fertilizer supplier and his salesmen for help and advice about various types of advertising. Ask for free mats, cuts, etc. File these where you can get at them handily. You won't be able to use all of them, but you'll use many, and they'll give variety and authenticity and scope to your advertising program.

The supplier, too, will share the cost of some advertising where his products are mentioned prominently.

6. You are now ready to draw up your ad budget. Be realistic. Look at last year's gross volume. Are you willing to spend ¼% or 1% or what? Figure it out in dollars. Is it \$500, \$1,000 or \$3,000?

Make a decision. Having decided on

a percentage, stick to it for the entire year. Consistency counts. Don't go over the budget unless absolutely necessary. Don't stay under it. Good advertising is like a snowball. It gathers momentum and weight. It picks up more business as it gets rolling with speed.

7. If you live in a small town or city, remember that names of people, especially farmers, mean a great deal. So do specific results. Don't brag too much about your fertilizer being superior to all others. However, never fail to extol its merits consistently.

Balance your copy. Talk about your fertilizer one third of the time. Talk about your customers and the results they get with crops—and this should take up another third of the copy. Use the final third for detailing your store policies, stock of goods on hand and your services to the farmer. Use names, names, names of customers whenever you can, and in a favorable light. It builds business. Anyone in a rural territory can attest this.

8. Map out a consistent advertising program and stick to it. Vary your copy appeal with ads supplied by suppliers, but then at other times have your copy maintain a purely local appeal. In this way you'll give your ad program variety of appeal and this will hold the attention of more readers.

9. Take that newspaper editor or publisher to lunch. Regale him with information about what farmers are accomplishing through using fertilizer properly. If you keep this up, a sort of "soft sell" approach, the publisher will usually say, "That is very interesting to me. I think I'll go out and see Bill Smith tomorrow. Maybe I can get a story and pictures on his big corn yield."

Isn't that a better way to get free publicity than to say to the publisher across the counter at the busy printing office, "Ed, I'm an advertiser. How about publishing an article and picture on a farmer using my brand of fertilizer? He's doing a good job."

Newspaper publishers value their independence. They do not like to be told by anyone, advertisers included, what to print and what not to print. But there are ways of helping them get information which is newsworthy, letting them smell the news trail, like a bloodhound smells the trail of a wanted person.

The alert fertilizer dealer can be responsible for the securing of much favorable publicity about fertilizer and other farm products in local newspapers during a year. In fact, measured in column inches, such free publicity can compare favorably with the total paid advertising you buy. It depends upon you.

Your name won't be mentioned as the fertilizer dealer who sold the publicized farmer his fertilizer, but he'll tell inquiring neighbors your fertilizer helped do a good job. You can also clip and post such publicity on your bulletin board, with a typed or written note that John Q raised this crop with 10-10-10 which he bought from you, or whatever the analysis may be. Other farmers will see this and thereby you'll get further advertising.

No one can plant seeds in a garden and expect a full crop unless that garden is cultivated and cared for properly. Neither will advertising produce the results the dealer wants if it is held on the knee and fondled one week and then put aside and neglected the next. The dealer who uses advertising wisely can increase his business considerably.

Men can communicate with one another best through words. Ideas are transmitted through words. When your ideas are in printed words, thousands read and think about them. And some will buy who might never hear what you say if you stand at your store door and shout all day long.





Doing Business With

# Oscar & Pat



By AL P. NELSON  
Croplife Special Writer

When Oscar Schoenfeld came to work that summer morning, his spirits soared when he opened the door to the store and discovered that he was first on the job. Oscar's self esteem always rose when he discovered that he got to work before anyone else on the payroll. It was an example he liked to set, so that when others came late, notably Pat, their conscience would make them squirm, while he, Oscar, would be sitting at his desk enjoying it all.

Now like a detective, Oscar went from desk to desk, starting with Tillie's, fingering this paper or that. He wanted to keep track of things. He wanted to see if anyone had been slipping over anything on him.

He came to Pat's littered desk and let out a snort. "Ach, another half page adt he is making up!" he cried. "A soil sample week. Free tests. We pay the 25¢ fee. Again he's throwing money away."

His face began to get red as he fumed. "Look," he said to Tillie who was just coming in the door. "We had a soil sample drive last spring. We had newspaper adts and billboard signs. Why do we need a soil sample week now? That Pat has gone crazy again."

"Oh, no, Oscar, not another one of those days!" exclaimed Tillie. "If you two keep on quarreling, I'll really quit. Remember the time you had with that other girl when I left?"

Oscar groaned. Only too well did he remember. Tillie's replacement had put the firm's money in the wrong bank and flirted with the new teller so that he got the accounts mixed up, too.

"You can go in the warehouse when I argue with Pat," Oscar said grudgingly. "Ach, I can't let him bankrupt this business with his crazy ideas. But don't stay too long out there. I will try to keep the arguments short. Himmel, what a partner."

"Isn't soil testing the first step in selling fertilizer?" Tillie said. "When the farmer knows what his soil needs he is likely to buy more lime and fertilizer."

"It makes more work for us," Oscar cried. "We haf to talk to all these people that come in and ask questions. We haf to listen to their silly jokes and all their foolish talk. We can't get our own work done. Ach, some people who gas think we got time to gas, too. We ain't. We have to work hardt for a lifing, or we go bankrupt."

At this moment Pat McGillicuddy came into the office, took off his hat and sat down. "I've got to hurry with this ad," he said. "The newspaper wants the copy by 1 p.m. so it can make this week's issue."

"Throw it in the basket," Oscar snapped. "We don't need that adt. Free soil sample week. You just had a soil sample monkeybusiness last spring. Did you forget that?"

Pat looked very surprised. There was a glint in his eyes. "Why that was just a start, Oscar. You have to keep hammerin' at soil testing year in and year out. It's the basis for selling more fertilizer."

Oscar's face got very red. "Well, let somebody else do the hammering then," he snapped. "Let's stick to selling fertilizer for cash, and collecting bills that are overdue. Ach, don't forget those things."

"The spring soil sample test worked out very well," Pat said sharply. "We sold a lot of extra lime and fertilizer."

"Ach, and we ain't collected for some of the fertilizer yet," Oscar reminded him.

"But there are always some slow payers in every business, Oscar," Pat said patiently. "Lots of those who bought last spring have paid in full."

"Ach, but our profit is in those that still ain't paidt," Oscar snapped. "You can't get away from that. We soldt all that fertilizer for nottink until we get paidt for all of it."

"I'm going out into the warehouse," Tillie said resignedly, as she got up from her desk. "If you're still arguin' after 10 minutes, I'll go across the street for coffee."

Neither partner really heard her. It was just like a gentle wind stirring the curtains when one is sleeping.

"Oscar," said Pat intently, "reports from several midwestern states show that only 20 to 25% of farmers have their soil tested. This is one of the richest agricultural regions in the world. All the farmers should have their soils tested. If they did, they would buy more fertilizer, and our sales would increase greatly. The place to start is with soil testing. Once we get farmers steamed up about soil testing and its importance to their profits, then we can start selling more fertilizer."

"Ach, let somebody else do all that work," Oscar growled. "Let the ag classes in high school hammer it home. Let the county agent do it. Let the state ag college do it. Those fellows all got good paidt jobs. They shouldt be doin' it. Not us. We have to sell and collect before we make our salaries. You like to get paidt every Saturday, don't you?"

"Of course I like to get paid," returned Pat testily. "But I know what we have to do to bolster our business. We have to push a program other dealers don't. If we give the farmer service, if we help him with soil testing, he'll get to know us better, like us and give us more business. And the soil testing will show him what he needs and that he should buy from us."

"Ach," Oscar said, "you talk too much. Just like a politician."

"Well, you have to talk to sell," Pat snapped. "And during this soil sample week, Oscar, I've got suppliers committed to helping us provide a number of small prizes so that we can give something to every farmer who brings in a soil sample that week, Sept. 1 to 7. And the suppliers will have men here to give talks and lectures on soil testing results. Even the county agent said he would come and talk."

"Himmel!" cried Oscar. All those people here? How will I effer get my discount work done, with people asking foolish questions all the time?"

"Oscar," said Pat patiently. "Customers come first. If you take care of them first, then the book work will fall in line and you won't have to use red ink."

"That's what you think," Oscar burst forth. "McGillicuddy, you shouldt go back to school. If you don't take care of the money you got invested and the money that comes in—and that means discounts, too—you wind up kaputt at the endt of the year. Let the customer look outt for himself. Our chob is to look outt for ourselves first. Now don't bother me no more. I got discounts to figure."

## INSECT CONTROL PROJECT

MONROEVILLE, ALA.—The Monroeville Chamber of Commerce and Town Council have initiated a program in conjunction with the U.S. Department of Agriculture for insect control and eradication. Estimated cost of the plan is \$15,000, with the local entomology branch of USDA, under direction of Thomas Lemons, furnishing materials and the town furnishing the labor. Plans call for every square foot of soil under police jurisdiction in Monroeville to receive an application of granulated dieltrin.

## California to Set Up Agricultural Biochemistry Department at Davis

DAVIS, CAL.—A new department in agricultural biochemistry will be established this fall on the campus of the University of California at Davis, it has been announced by the university administration offices.

The department will be housed in the new soils and plant nutrition building, at present under construction. Paul K. Stumpf, professor of plant biochemistry and chairman of the department, will move to Davis from the Berkeley campus Sept. 1, along with Eric E. Conn, associate professor of plant biochemistry at Berkeley.

L. L. Ingraham, U.S. Department of Agriculture, will join the staff as assistant professor of enzyme chemistry. A fourth staff member will soon be appointed in the field of animal biochemistry, said Prof. Stumpf.

The department will offer graduate courses in general biochemistry, advanced intermediary metabolism, and enzyme chemistry, with work leading to a doctor's degree in comparative biochemistry.

The research program will be in the fields of enzyme mechanisms, aromatic biosynthesis in plants, comparative respiration and several aspects of fat metabolism in higher plants, Prof. Stumpf said.

## Gloomicides

Husband: "What is it, dear?"

Wife: "I found another lipstick in the car. Have you been out again with that fellow who sells cosmetics?"

★

The busy advertising account executive was showing a friend around his offices. "Beautiful, aren't they?" he said proudly. "We get quite a deal here—terrific expense accounts, long vacations—and a fine pension when we're 65."

"Yes, but you've only been out of college for a few years," said the friend. "When do you get to be 65?"

"In this business," answered the harassed executive, "you get to be 65 overnight."

★

A strong smell of frying fish pervaded the flat when Howard came home one evening. "Just why," he groaned, "have we had to have fish for dinner every night this past week?"

"Because, darling," his loving wife explained, "in my first-aid class I learned how to remove fish bones from the throat, and I want to practice."

★

It was lunch time. The worker opened his lunch box, looked in and growled, "Cheese sandwiches! Cheese sandwiches! Always cheese sandwiches!"

"Why don't you ask your wife to make some other kind?" asked a fellow worker.

"Wife? Who's married? I make these myself!"

★

Father was sitting in the armchair watching TV one evening when Junior came in and showed him a new watch, explaining that he had found it in the street.

"But, son," objected the father, "are you sure it was lost?"

"You bet it was lost," answered Junior. "I even saw the man looking for it!"

Doctor—"That pain in your leg is caused by old age."

Grandpa—"Nonsense. The other leg is the same age and doesn't hurt a bit."



**SEASONAL DISPLAYS PAY OFF**—Seasonal merchandise such as livestock spray and weed sprays are given additional display at the F. Mueller & Sons store, Maquoketa, Iowa. This additional display brings more sales, say store officials. The firm uses several flat top counters on which gallon cans of seasonal sprays are displayed in considerable quantity. Thus when farmers come into the store to buy other farm needs they can't help seeing the big array of livestock and weed sprays and often make purchases. "Expose the customers to the merchandise" is the policy here that pays off.





## FARM SERVICE DATA

### Extension Station Reports

Thiodan, a new insecticide, may give strawberry growers a better defense against the destructive cyclamen mite.

Not yet available for commercial application, the new spray chemical provided good mite control in three years of testing at the University of California.

Best results were obtained when Thiodan was applied as a high-gallonage spray, according to entomologist W. W. Allen of the Berkeley staff.

Two Thiodan applications per year may be sufficient for control, Mr. Allen said.

Comparable to Endrin in its mite-killing effect, Thiodan is better suited for application on strawberries because of lower toxicity and faster dissipation of its residues. At present, Endrin is not applied to strawberries because of the persistence of toxic residue on the fruit.

In recent years, California strawberry growers have depended on a university-developed treatment using methyl bromide to get rid of cyclamen mites in the fields. This treatment has proved effective, but it's expensive and difficult for the grower to apply properly. Spray treatments with Kelthane have given some control and avoided the residue problem, but numerous applications are necessary for effective action.

Though not a cure-all, Thiodan does show promise of aiding growers in their fight against the tiny cyclamen mite, which causes damage up to \$2 million per year according to recent state estimates.

When will Thiodan be available to growers? Not before next spring at the earliest, Mr. Allen said. Further testing must still be done, and the residue tolerance on strawberries will have to be established.

The level of this tolerance, dependent on animal feeding trials, will in large determine the practicality of Thiodan for cyclamen mite control, he explained.

★

Three natural areas have been set up at the University of California Hopland Station in Mendocino County for comparison through the years with nearby rangelands that are undergoing permanent changes by re-seeding, fertilization and other treatments.

Domestic livestock are being permanently excluded from these three natural areas, which are also protected from burning, tillage, and other changes by man, according to Robert H. Burgy, assistant professor of irrigation at Davis and head of the Hopland research committee.

The natural vegetation, native animals, and unmodified soils of the protected range will be a valuable standard or yardstick against which to judge the permanent changes in the improved ranges, he said.

Several studies will be set up in the natural areas. One will compare the soil erosion and runoff of a protected watershed with that of a similar but grazed site. Another project will obtain a record through periodic measurement and photography of the changes in the kinds, forms, and numbers of plants over a period of many years.

Ultimately the protected vegetation will serve as an index for the complex relationships of climate,

soils, and land use and will provide a basis for comparison with other ranges, said Mr. Burgy.

The trends in animal populations that accompany changes in plant cover are being studied through periodic censuses of the kinds and numbers of birds and mammals within each of eight vegetation types, including grasslands, shrubs and oaks. The value of these areas will increase with time as they differ more and more from nearby areas modified by continuous use, said Mr. Burgy.

Range specialists, agronomists, bo-

tanists, zoologists, entomologists, foresters and soils and irrigation specialists will be among those working in and studying the natural areas at Hopland.

★

Spraying jack pine pulpwood for insect control can save at least 50 cents per cord of wood, according to research by University of Wisconsin forest insect researchers.

R. D. Shenefelt and M. J. Stelzer sprayed jack pine pulp logs with benzene hexachloride. Then they compared insect numbers, yield of pulp, moisture content, and quality of pulp from treated and untreated wood cut at the same time.

Treated wood produced 2.8 percent more pulp than untreated wood, the tests showed. Peeling—which also reduces insect damage—produced about 4½% more pulp than untreated wood. However, costs of peeling pulp logs are very high.

Mr. Shenefelt and Mr. Stelzer point out that the paper industry is

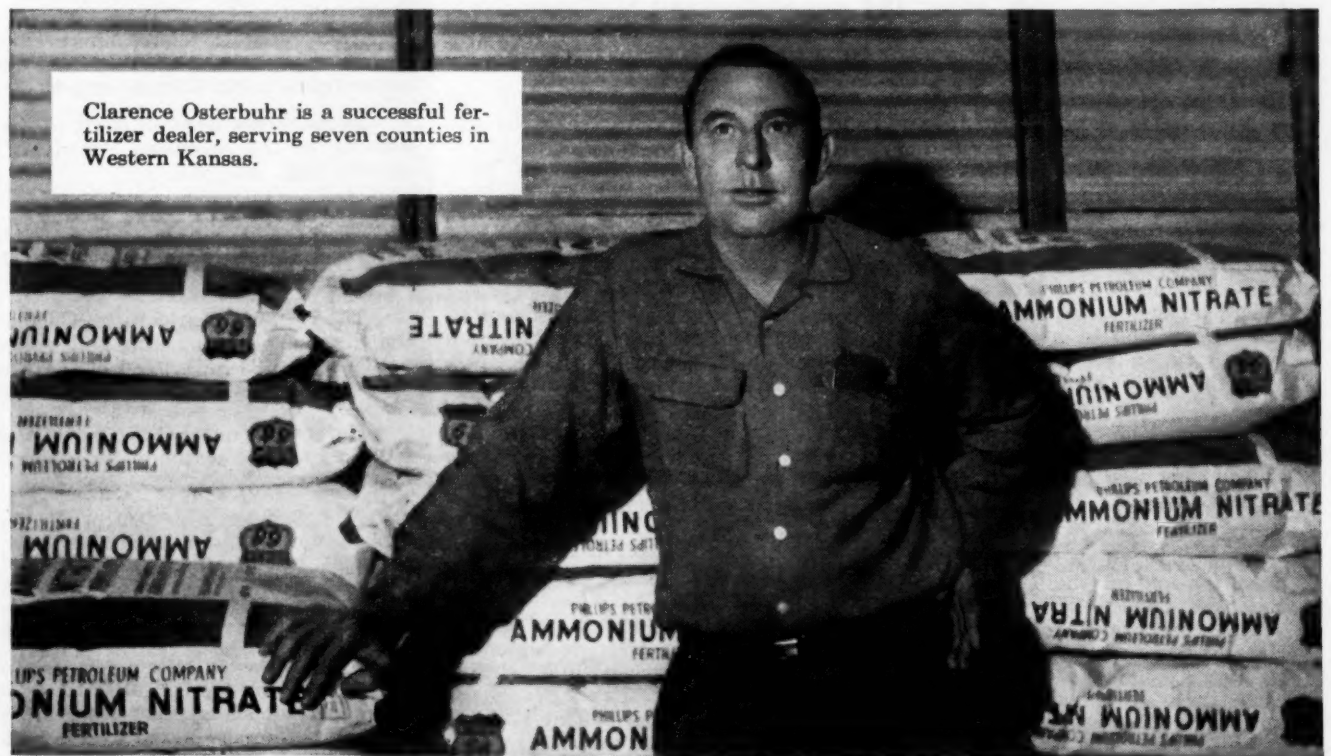
quickly adopting the spraying practice. Two large users of jack pine in the Lake States have started spraying all wood cut during the season of insect activity or stored in the woods during that period.

Cutters get 15¢ per cord extra for spraying, and the companies provide the material and equipment. Cost of treatment totals 24¢ per cord but the pulpwood is worth about 75¢ per cord more than untreated wood. Each layer of logs is sprayed as the pulpwood is piled into decks. The ends of the decks are sprayed at quitting time each day.

On the other hand, it doesn't pay to spray popple (aspen) pulpwood for insects.

Mr. Shenefelt and Mr. Stelzer found that popple pulp logs do not contain very many insects. And the insects they found in popple logs weren't important in causing decay of the wood or poor quality of pulp.

But it probably would pay to treat balsam, other types of pine, and spruce logs before storage, Mr.



Clarence Osterbuhr is a successful fertilizer dealer, serving seven counties in Western Kansas.

## “My Customers Prefer Phillips 66 Ammonium Nitrate” — Clarence Osterbuhr ANAMO CO., INC., Garden City, Kansas



**Proof of performance:** Users of new Phillips 66 Ammonium Nitrate find it easier to handle . . . the result of an exclusive Phillips 66 process that gives hard, dry and uniformly round prills. Stores better, flows more freely, spreads more uniformly.

**Mr. Osterbuhr says:** “We serve an area where the farmers have a comparatively long experience with nitrogen fertilizer. That's why I'm particularly pleased to offer Phillips 66 Ammonium Nitrate to my customers. Its uniformity and its exceptional free flowing qualities make it a favorite with farm users who expect the best.”

**The outstanding performance** of Phillips 66 Ammonium Nitrate is winning new customers for other dealers, too. Their farm customers like its ease of handling and uniform spreading, which helps give better yields.

**Dealers appreciate the extras** in the Phillips 66 program . . . consistent, convincing advertising of Phillips 66 Ammonium Nitrate in leading farm papers, personal service from Phillips 66 field men, and prompt deliveries which help dealers sell more, profit more. Order your supply of Phillips 66 Ammonium Nitrate today.

### PHILLIPS PETROLEUM COMPANY

Phillips Chemical Company, a Subsidiary, Bartlesville, Oklahoma

#### Offices in:

AMARILLO, TEX.—First Nat'l Bank Bldg.  
ATLANTA, GA.—1428 West Peachtree Street, N.W.  
Station “C” P. O. Box 7313  
BARTLESVILLE, OKLA.—Adams Bldg.  
CHICAGO, ILL.—7 South Dearborn St.  
DENVER, COLO.—1375 Kearney St.  
DES MOINES, IOWA—6th Floor, Hubbell Bldg.

HOUSTON, TEX.—6910 Fannin Street  
INDIANAPOLIS, IND.—3839 Meadows Drive  
KANSAS CITY, MO.—201 E. Armour Blvd.  
MINNEAPOLIS, MINN.—212 Sixth St. South  
NEW YORK, N.Y.—80 Broadway  
OMAHA, NEB.—3212 Dodge St.  
PASADENA, CALIF.—317 North Lake Ave.

RALEIGH, N. C.—401 Oberlin Road  
SALT LAKE CITY, UTAH—68 South Main  
SPOKANE, WASH.—527 East Sprague  
ST. LOUIS, MO.—4251 Lindell Blvd.  
TAMPA, FLA.—3737 Neptune St.  
TULSA, OKLA.—1708 Ulrica Square  
WICHITA, KAN.—501 KFH Building





Shenefelt and Mr. Stelzer say. Oak-like popple—doesn't seem to suffer enough injury to warrant spraying.

★

Methoxychlor looks promising as a control for parasites that destroy beneficial alkali bees—the Northwest's most important alfalfa pollinator. The principal parasite is the bombyliid (bee fly).

Nesting sites of bees treated with methoxychlor by U.S. Department of Agriculture entomologists had fewer parasites than did the same sites, untreated, the previous year. Only 32% of larvae in nests unearthed last fall were parasitized, compared to 96% in September, 1956.

ARS scientists cooperating with Utah Agricultural Experiment Station workers sprayed nesting areas with 4 lb. of methoxychlor in 30 gal. of water in an attempt to rid the area of parasites. More tests will be made to determine how effective the chemical is.

Good pollination is a major requisite for alfalfa seed production. Alkali-bee females visit about 12 flowers per minute and trip about 90%. The bees are two-thirds as large as honey bees with greenish-bronze bands across the rear portion of their bodies.

They nest primarily in moist alkali soil developed by irrigation. Fields within two miles of good nesting sites generally have effective populations.

Females construct nests with vertical underground burrows branching into one or two groups of brood cells. The females then provide each cell with a ball of nectar-moistened pollen, lay an egg on the ball, and seal the cell. After hatching, the larva eats the food and completes its development alone.

Researchers are attempting to establish new nesting sites by moving broods.

★

Irrigation in Iowa has increased almost ten-fold in the last six years. Extension Agricultural Engineer Ted Willrich of Iowa State College states. He said there are now 456 known irrigation systems in Iowa.

Of these, 294 are sprinkler systems and 162 are surface or gravity systems. Total acreage in Iowa under irrigation is more than 40,000, or an average of about 90 acres per system.

More than half the systems (226) get their water supplies from wells, Mr. Willrich says. Rivers and streams accounts for 175 systems, and reservoirs, ponds, gravel pits and drainage ditches account for the rest.

About 60% of the state's irrigated acres are located in eight counties along the western border of the state, from Sioux County south. About 40% of the state's irrigation systems are located in these eight counties. Average size of systems in this area is 137 acres. The most irrigated acreage in any one county is in Monona—49 systems totaling 8,430 acres. These are about half sprinkler and half surface systems. Water sources for the eight counties include 125 wells and 34 surface sources.

Across the state, Muscatine County has the most systems for one county—50. But these 50 average only 32 acres in size, Mr. Willrich says. Most of them are for truck farms. Forty-nine of the 50 systems in Muscatine County have a well-water source.

Seventy-one of Iowa's 99 counties have at least one irrigation system, Mr. Willrich states.

Irrigation costs vary greatly with location and system. He says that—comparing the cost records of three irrigators in Monona County whose systems averaged about 70 acres each—investigators found the investment ranged from \$50 to \$60 per acre. Total initial investment (for well, pump, motor and distribution system) ran from \$3,200 to \$4,000. Pumping rates varied from 1,000 to 2,000 gallons per minute.

Considering all costs—depreciation,

interest, taxes, insurance, labor electrical energy, lubrication, repairs—total annual cost per acre ranged from \$7.50 to \$9.50, Mr. Willrich says.

Any prospective irrigator or present irrigator who was not irrigating before the new state water law went into effect May 10, 1957, must have a permit before he can use water in excess of 5,000 gallons a day for irrigation.

Under the law, anyone irrigating before that date must also apply for a permit, but those people have the right to irrigate at their previous rates until their permits are acted on.

Farmers taking water for irrigation from the Missouri or Mississippi Rivers—or from wells on islands in those rivers—are not affected by the Iowa law.

★

A survey of the magnesium status of Mississippi soils for cotton production based on the magnesium content of cotton leaves indicated magnesium deficiency only in the Black Land area of Northeast Mississippi. Work toward the development of a suitable soil test for magnesium is now in progress.

Yields of cotton and white clover in Mississippi were increased by sulfur supplements applied with otherwise sulfur-free fertilizer in 1957. Both experiments were at the Pontotoc Ridge-Flatwoods Branch Station; the cotton was grown on Ecu silty clay loam, and white clover on Mayhew silty clay loam.

In the course of five years' experiments, cotton, white clover, crimson clover and Coastal Bermuda grass have all shown the need for sulfur in the fertilizer. These results have been obtained on sandy coastal plain, brown loam, flatwoods and Pontotoc ridge soils.

Continuous use of sulfur-free fertilizers should be avoided for the crops and in the soil areas indicated as responsive in results outlined above.

Comparisons in Mississippi of anhydrous ammonia and ammonium nitrate for the production of cotton, corn, and small grain for forage, as well as forage on permanent, summer pastures indicated that these materials were equally effective as sources of nitrogen when properly applied either in the fall or spring.

However, fall-applied nitrogen was inconsistent relative to spring-applied nitrogen for the production of spring and summer-growing crops varying in effectiveness from about 25% to 100%.

Laboratory studies having to do with the effect of varying the soil temperature and the capacity of soils to nitrify ammonium nitrogen ( $\text{NH}_4$ ) indicated that once nitrification is in progress under favorable conditions reduction of the soil temperature to about  $10^\circ\text{C}$  does not substantially retard nitrification except on very strongly acid soils, Mississippi extension workers say.

The conditions of temperature variation imposed on the soils in the laboratory were intended to simulate conditions that probably prevail at the time of and subsequent to the application of anhydrous ammonia in the fall in Mississippi. The results indicate that the nitrogen of fall-applied anhydrous ammonia (or other sources containing ammonium nitrogen) would be converted to nitrate-form rather rapidly and could, therefore, be lost by leaching and by denitrification.

#### NAMED CHAIRMAN

MENLO PARK, N.J.—Charles A. Specht, president of Minerals & Chemicals Corporation of America, Menlo Park, N.J., has announced that James Deshler, II has resumed full time status with the company and has been elected chairman of the board of directors.

## What's Been Happening?

This column, a review of news reported in Croplife in recent weeks, is designed to keep retail dealers on the regional circulation plan up to date on industry happenings.

Yield estimates for the 1958 crop year were stepped up by the U.S. Department of Agriculture as of Aug. 1. Earlier estimates of crop production went by the board as a new look was taken. New records were set on some crops, and all were above average in volume.

The Canadian Agricultural Chemicals Assn. announced that Hon. Duff Roblin, Premier of Manitoba, will be a guest speaker on its program, along with representatives of manufacturing firms and others in the farm chemical field. The meeting was set for Sept. 15-17.

Conventioners at the 1958 Beltwide Cotton Mechanization Conference, Brownsville, Texas, were told that the use of herbicides and insecticides can enhance cotton growth and that such use brings added profits to growers by cutting unit costs of production.

That a "somewhat mixed" pattern of pesticide sales has existed throughout the 1958 season was observed by Melvin Goldberg, Pesticide Advisory Service, New York, in an article on Aug. 18. He said that price declines on some pesticides, exports, lack of demand for some products, and tight supply situations on others have made a confused picture.

Pesticide output for 1957 dipped some 10% below that of the previous year, according to a preliminary report by the U.S. Tariff commission. It said that production of pesticides and other organic agricultural chemicals amounted to some 512 million pounds.

Agronomists from all parts of the U.S. were in attendance at the annual meeting of the American Society of Agronomy at Purdue University, Lafayette, Ind., Aug. 4-8.

The Federal Food and Drug Administration said that it would raise the fee schedule for determination of pesticide residue levels as required under the terms of the Miller Amendment to the Food and Drug act.

The National Agricultural Chemicals Assn., Washington, D.C., announced that its annual fall meeting will be held at the Gen. Oglethorpe Hotel, Savannah, Ga. Oct. 29-31, instead of the Augusta, Ga. location as previously stated. The originally-set dates will remain the same, however.

Ketona Chemical Corp., Ketona, Ala., announced that it would expand its facilities for production of prilled ammonium nitrate and ammonium nitrate-limestone.

A. J. Schuler, president of the Welcome Agricultural Chemical Co., Welcome, Minn., died of a heart attack on Aug. 2.

The new farm bill, a victory for Ezra Taft Benson, secretary of agriculture, called for a new look at fertilizer and pesticide markets as a significant shift away from the parity concept loomed.

Charles M. Miller, former Monsanto Chemical Co. employee, was enjoined by the U.S. District Court in Salt Lake City from revealing any trade secrets and other information and data belonging to Monsanto. Now employed by Central Farmers Fertilizer Co., Mr. Miller had been accused of revealing trade secrets to his former employers.

A sum of \$280,000 a year was granted by Congress for a thorough study on the effect of pesticide spraying on wildlife.

Some 300 persons attended the Southwestern fertilizer grade hearing in Galveston, Texas in July.

The Midwest Regional Advisory Committee of the National Plant Food Institute approved plans for many-sided projects including grants-in-aid, scholarships, educational news services, and cooperation with bankers.

A public relations panel discussion and an imposing list of speakers are on the program for the 25th anniversary meeting of the National Agricultural Chemicals Assn. scheduled to be held at Savannah, Ga., Oct. 29-31. The association announced the tentative program plans late in July.

Paraguay exempted fertilizers from payment of import duties. Chemicals mentioned specifically in its law included commercial potash, caustic soda, sodium nitrate, sodium sulfate and sodium carbonate.

R. P. Thomas, International Minerals & Chemical Corp., Chicago, was made chairman of the National Plant Food Institute's Midwest Research and Education committee.

Kenneth D. Jacob, chief of the Fertilizer Investigations Research Branch, Soil and Water Conservation Research Division, USDA, was selected to receive the 1958 Harvey W. Wiley Award of the Association of Official Agricultural Chemists.

That food labels need carry no information about whether or not pesticides have been applied to the crop before harvest was decided by the House Interstate Commerce Committee. The ruling amended the definition of what constitutes chemical preservatives as referred to in the Federal Food, Drug and Cosmetic Act. Pesticides are not preservatives, it was brought out.

A new firm in Ecuador for the processing of pyrethrum flowers was announced. Known as Inexa, Industria Extractora C.A., the firm will be under the managership of Dr. Luis Werner Levy.

Dr. O. B. Jesness, agricultural economist, writes that the partnership between farmers and bankers, increasing over the years, is now an important factor in the purchases of ample amounts of fertilizer materials and other farm needs.

Attorneys for the plaintiffs in New York's DDT trial announced that they would appeal the decision of Judge Walter Bruchhausen who had ruled that the 14 Long Island residents who tried to stop the government's pesticide spray programs had no proof for their claims against DDT.



## "Little Giants" of Advertising

### Small Ads Can Produce Big Results

By Ruel McDaniel

Owners of smaller retail stores sometimes hesitate to advertise in their local newspapers for the reason that they feel that it would cost too much to advertise effectively. "I can't compete for reader interest with the department and chain food stores," one dealer moaned.

By capitalizing on a peculiarity of newspaper make-up, whereby the small advertiser is unintentionally given a real "break," the owner of even the smallest store can afford to advertise and advertise much more effectively, dollar for dollar spent, than the merchant with a large appropriation.

Obviously no owner expects to spend \$3 or \$4 a week for advertising and create a "run" on his store; but if he can spend a modest sum and by it build prestige for his store and major lines and thereby pave the way for personal contacts, the advertising investment is sound and worthy of consideration.

The merchant can do this by taking advantage of the standard style of newspaper make-up, whereby the smaller the advertisement on the average newspaper page, the better position it gets in relation to other advertisements and reading matter on the same page.

Practically all newspapers, large or small, utilize some variation of the "pyramid" style of page make-up.

This means that the largest ad on the page goes at the bottom to form the base of the advertising; the next largest drops in either above the largest piece of copy or beside it, depending on the actual size of the two advertisements. The next largest goes above these, and so on until the smallest ad to go on the page tops all the rest. This is where the small store copy comes in: It has the best position on the entire page, because of its smallness, and it can return far greater results per dollar spent than any other copy on the page.

A common use of the pyramid style make-up is to place the ads on two facing pages in such manner that a half-pyramid is formed by them on the left-hand page, starting from the lower left-hand corner, and another half-pyramid is built on the right-hand page, starting at the lower right-hand corner. Thus the advertising area forms, roughly, two half-pyramids, while the reading matter on the two pages makes an inverted pyramid. That means that the nearer the top of the page the advertisement appears, the more reading matter it borders—and relation to reading matter is a vital factor in the pulling power of any advertising, for if the position is right the reader sees even the smallest ad while scanning the reading matter, whether he consciously wants to see the advertisements or not.

Some papers, still following the pyramid style, run a half-pyramid of advertising on each side of a single page, with the reading matter running wide at the top and falling in between the two half-pyramids of ads, to give the reading matter on a single page an inverted pyramid effect.

Still others lean to a half-pyramid style with advertising falling on the right-hand side of each inside page, with the largest ads going at the bottom in the manner of the other two arrangements. This gives a half-pyramid inverted for the reading matter and still brings the small ad at the top of the heap, with a greater exposure to reading matter.

Regardless of which variation of the pyramid style of make-up your local papers utilize, single-column

copy invariably will find a spot with reading matter on one side and probably directly above it as well. The small two-column copy has almost as good a break but not quite.

The single-column copy should never run more than 5 in. high, and the smaller it is, the better break it receives in this pyramid make-up.

Thus the small advertiser with a modest budget for newspaper space, has a distinct advantage over the user of larger space, insofar as actual returns per dollar spent are concerned, because the very fact that his ads are small automatically gives him a break in ad position. Most advertising experts agree that two major factors govern the results of advertising: Quality of copy—and position on the page. Thus the store with its small budget automatically has solved one of the two major factors in obtaining good advertising results.

With "position" handed him auto-

matically because of the modesty of his advertising, the small retailer has only one real advertising problem: To prepare copy that will be read. Obviously, that takes time and thought. It is more practical to prepare several small ads, each carrying a heading that puts over a single item or service the advertiser wishes to feature, followed by very brief secondary copy and the signature. If the heading suggests a specific product the advertiser wishes to feature and the signature is equally prominent, the little ad is effective, even if nobody takes the time to read the line or two of small print between. The several ads then should be inserted in rotation. When all have been used, then start with the first and repeat.

Some users of small space kill much of the otherwise effectiveness of the ads by attempting to say too much in a single piece of copy. Get over one item, then stop. Others then may be "sold" in subsequent ads of the rotating series.

Some merchants desiring to keep two or three major items in the foreground regularly, run as many small ads in the same issue of the paper, each of course on a different page. It

normally is more resultful to insert three two-inch ads each featuring a single brand than to try to stress three different items in a 6-in. ad. And in addition, repetition of the store name on three different pages is more effective than printing it once in the 6-in. copy, because repetition of name is an important task of advertising in any form. Accumulative effect of repetition is a major element in advertising, and the more often the name is printed, the more it becomes familiar to newspaper readers and thereby paves the way for eventual patronage.

The dealer who hesitates to use newspapers to advance his selling job because of such limited money available for advertising is unrealistic, in view of the tremendous work the "little giants" of the make-up store can accomplish for him.

#### TO DAVEY POSITION

KENT, OHIO—Appointment of Dr. Carl O. Hansen as research and extension worker and advisor on tree care problems of the technical service center of the Davey Tree Expert Co., has been announced by Homer L. Jacobs, vice president. Dr. Hansen's duties will center chiefly in the field of tree insect problems and diseases.

## Books on Fertilizers And Their Use

### FOREST FERTILIZATION

Donald P. White and Albert L. Leaf

A bibliography, with abstracts, on the use of fertilizers and soil amendments in forestry. Useful to those interested in prospects of a plant food market in forest areas, the book resulted from a special two-year study at the college of forestry, Syracuse University, Syracuse, N.Y., under sponsorship of the Nitrogen Division of Allied Chemical & Dye Corp. The book contains 300 pages, 700 references, with abstracts, and covers the period from 1865 through 1956. Includes the use of fertilizers in forest management ..... \$3.00

### SOIL FERTILITY AND FERTILIZERS (1956)

Samuel L. Tisdale and Werner L. Nelson

An advanced college text, for juniors and seniors, following backgrounding course in soils. Covers elements required in plant nutrition, their role in plant growth, and the soil reactions to these nutrients. Several chapters on manufacture, properties and agronomic value of fertilizers and fertilizer materials. Latter part covers soil fertility evaluation and use of fertilizers in sound management program. 430 pages, cloth bound ..... \$7.75

### PLANT REGULATORS IN AGRICULTURE

Dr. Harold B. Tukey

Published September, 1954. A text book giving background material for county agents, farmers, citrus growers, nurserymen, gardeners; providing fundamentals and general principles; covers encouragement of roots by plant regulators, control of flowering and fruit setting, parthenocarp, abscission, prevention of preharvest fruit drop, delaying foliation and blossoming, maturing and ripening, inhibition of sprouting and weed control. Brings together specialized knowledge of 17 authorities in the field, with two chapters written by Dr. Tukey, head of department of horticulture at Michigan State College. 269 pages ..... \$6.50

### THE CARE AND FEEDING OF GARDEN PLANTS

Published jointly by the American Society for Horticultural Science and the National Plant Food Institute.

An entirely new, one-of-a-kind book. It is designed to acquaint readers with nutritional deficiency symptoms or "hunger signs" of common yard and garden plants including lawn grasses, shrubs, flowers, garden vegetables, and cane and tree fruits. It stresses plant "feeding," or "what makes plants grow." Sixteen of the nation's leading horticultural authorities collaborated in its preparation. Cloth bound, 300 pages of text and illustrations including 37 pages in full color ..... \$3.00

### AUXINS AND PLANT GROWTH

A. Carl Leopold

A 366-page book, complete with bibliography, appendix, and index, discusses the fundamental and applied aspects of growth hormone and synthetic auxin action in plants. These are of interest to all workers in agricultural chemicals—for weed control, flowering control, fruit set, flower or fruit drop and plant propagation. The text is divided into two sections, (1) fundamentals of auxin action, and (2) auxins in agriculture. These cover developmental effects of auxins, the physiological and anatomical effects of their application, the chemical nature of growth regulators, and methods of applying auxins and their persistence in plants and soils. Other subjects covered: rooting, parthenocarp, flower and fruit thinning, control of pre-harvest fruit drop, flowering, dormancy and storage, herbicides, miscellaneous uses of auxins, and potentials of auxins and auxin research. Published by University of California Press ..... \$5.00

### ECONOMIC AND TECHNICAL ANALYSIS OF FERTILIZER INNOVATIONS AND RESOURCE USE

By E. L. Baum, Earl Heady, John Pesek and Clifford Hildreth.

This book is the outgrowth of seminar sessions sponsored by TVA in 1956. Part I—Physical and Economic Aspects of Water Solubility in Fertilizers. Part II—Examination of Liquid Fertilizers and Related Marketing Problem. Part III—Methodological Procedures in the Study of Agronomic and Economic Efficiency in Rate of Application, Nutrient Ratios and Farm Use of Fertilizers. Part IV—Farm Planning Procedures for Optimum Resource Use. Part V—Agricultural Policy Implications of Technological Change. It presents new methodological techniques for more efficient handling of research problems related to fertilizers and provides more meaningful answers to problems of practical application ..... \$4.50

### HUNGER SIGNS IN CROPS—Second Edition

A symposium—published jointly by the American Society of Agronomy and the National Plant Food Institute.

A comprehensive study of nutrient-deficiency symptoms in crops compiled by 19 of the leading authorities in the field. It is being widely used by college professors, research and extension specialists, industrial chemists and agronomists, county agents and teachers of vocational agriculture. Many farmers have found it of particular value in planning their fertilizer programs. Cloth bound, 390 pages, 242 illustrations, including 124 in full color ..... \$4.50

### USING COMMERCIAL FERTILIZER (1952)

Malcolm H. McVickar

Dr. McVickar is chief agronomist of the National Fertilizer Assn. The book deals specifically with commercial fertilizer, how it is produced and how to use it. It is non-technical. It includes chapters on how to measure fertility of soils, secondary and trade-element plant foods. 208 pages, 106 illustrations, cloth bound ..... \$3.50

### COMMERCIAL FERTILIZERS, Their Sources and Use—Fifth Edition (1955)

Gilbeart H. Collings

Based upon the author's practical experience as an experiment station agronomist and teacher, and incorporating information on recent developments by agronomists, chemists, engineers and fertilizer manufacturers. Authoritative on problems concerning commercial fertilizers and their use in gaining larger yields. 160 illustrations, 522 pages ..... \$8.50

### APPROVED PRACTICES IN PASTURE MANAGEMENT (1956)

M. H. McVickar, Ph.D.

Outlines clearly and concisely how to have productive pastures to furnish high-quality forage for livestock, economically and efficiently. Written for grassland farmers. Covers the important activities associated with establishment, management and efficient use of pastures as grazing lands or as a source of fine winter feed for livestock. It is as specific as possible for all U.S. pasture areas. Twenty chapters, 256 pages, illustrated ..... \$3.00

### MANURES AND FERTILIZERS

A survey by the Ministry of Agriculture and Fisheries, dealing with soil analysis, inorganic fertilizers, waste organic substances and principles of manuring. In language to give the farmer basic principles of increasing soil fertility by the application of natural organic manures and synthetic inorganic fertilizers. Many important tables on quantitative data ..... \$2.50

## Order From Croplife

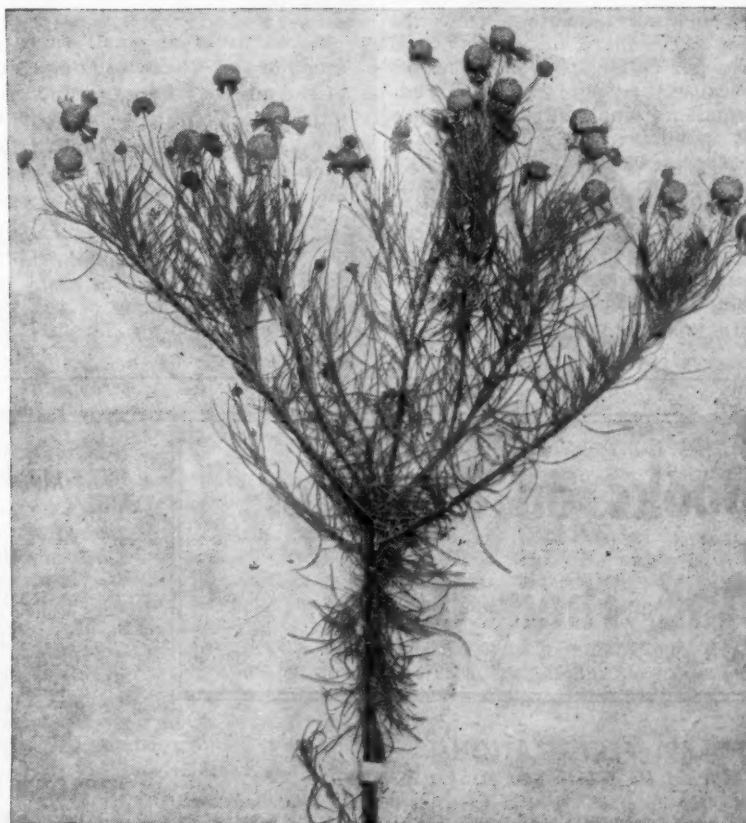
Reader Service Department  
P.O. Box 67  
Minneapolis 40, Minn.

(enclose remittance)



# WEED OF THE WEEK

Mr. Dealer—Cut out this page for your bulletin board



## Bitterweed

(*Helenium tenuifolium*)

### How to Identify

This weed may range from 6 to 30 inches in height, with smooth, erect stems, branching in the upper portion. Leaves are numerous, smooth and thread-like. They are arranged in alternate fashion, and appear to be crowded along the main stem and branches. The flower heads are about  $\frac{3}{4}$  inch in diameter, and the ray flowers are yellow with a toothed tip, surrounding a dome-shaped mass of yellow disc flowers.

### Habits of Bitterweed

An annual plant, reproducing from seeds, it flowers from August to October, and seeds September to November. It is a North American native, and is distributed generally throughout the eastern portion of the U.S., particularly in the southeastern section of the country. It flourishes particularly in gardens, dooryards,

waste places, and in lowland fields, especially in damp areas where rich soil is available.

### Harm Done by Bitterweed

When eaten by livestock, the weed acts as a toxicant causing sneezing on the part of the animals. It is not usually serious unless large quantities are eaten by cows, horses and mules. When milk cows graze heavily on fields infested with this weed, however, they produce milk with a bitter taste, thus rendering it unmarketable. It is also objectionable when intermixed with prairie hay, because of its bitter properties.

### Control of Bitterweed

Both chemical and cultural means of control are suggested by various authorities. A number of herbicides are effective, and cultural means of control are helpful if carried out over a period of several seasons.

Illustration of Bitterweed furnished through the courtesy of U.S. Department of Agriculture.

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## Midwest School for Accident Prevention Planned for September

WASHINGTON—A school in accident prevention for fertilizer plant personnel in the Midwest is slated for Sept. 10-11 at the National Safety Council's headquarters in Chicago, it has been announced by the Council's Fertilizer Section. This is the third such course in a series of five sponsored by the National Plant Food Institute.

Cooperating in setting up arrangements for the school are John E. Smith, director of safety, Spencer Chemical Co., Pittsburg, Kansas and Glenn Griffin, director of industrial training, National Safety Council. The Midwest regional office of the National Plant Food Institute, Chicago, is assisting in the arrangements.

All fertilizer manufacturers doing business in the Middle West will be invited to send supervisory personnel to the school.

The two-day session will cover numerous phases of safe handling of materials, and also will deal with safety problems involved in the formulation of fertilizer-insecticide mixtures.

The registration fee will cover instruction materials provided for each registrant, including safety manuals, educational literature, poster and other safety aids.

This school was preceded by one at Cornell University, Ithaca, New York, in August, and a second one will be held at Atlanta, Ga. on Sept. 4-5. The Southwestern session and Western school, tentatively have been set for Austin, Texas and San Mateo, Cal., respectively.

The program for the Midwestern school includes the following speakers and their topics:

Wednesday, Sept. 10—8:30 to 9:00 a.m., registration. Introductions and purpose of school will be given by George L. Pelton, vice chairman, fertilizer section, Smith Agricultural Chemical Co. Other topics and speakers include: "Fundamentals of Accident Prevention," Dave Arm, manager of industrial sections, National Safety Council; "The Foreman's Safety Job for All Line Management and Supervisory People," John E. Smith, director of safety, Spencer Chemical Co., and a film, entitled, "No One Else Can Do It."

"Personal Factors in Safety," Glenn Griffin, National Safety Council; "Problems We Would Like to Have Solved," John Gallagher, senior industrial engineer, National Safety Council; "Discovering Accident Hazards," W. C. Creel, safety director, Department of Labor, State of North Carolina, and a film, entitled, "Pick Your Safety Target."

On Thursday, Sept. 11: "Teaching Job Skills—Teaching Safety," Glenn Griffin, and a film, entitled, "Teaching Safety on the Job;" "Materials Handling Problems of the Fertilizer Industry," C. Z. Greenley, director, insurance and safety, International Minerals & Chemical Corp.; "Maintaining Good Order for Safety," W. C. Creel, and film, entitled, "Case of the Cluttered Corner;" "Safety Materials and Services of the National Safety Council," R. L. Benson, National Safety Council; "Fertilizer-Insecticide Mixtures," R. C. Fitzgerald, plant manager, Smith-Douglass Co., Inc., Streator, Ill.; and "Safe Use of Liquid Materials in a Fertilizer Mixing Program," L. L. Lortscher, Spencer Chemical Co., Columbus, Ohio. A summary and discussion will terminate the sessions.

### TO NEW YORK POSITION

NEW YORK—Henry Gessner, Jr., has joined American Potash & Chemical Corp. as assistant export manager in the company's New York offices. He will be in charge of company exports to Central and South American countries and will be under the direction of Ernest A. Graupner, AP&CC export manager.

## Fertilizer Technology School Is Scheduled By NPFI for 2-Day Session in California

WASHINGTON—A two-day farm advisers fertilizer technology school, sponsored jointly by the National Plant Food Institute and the Agricultural Extension Service of the University of California, opens on Sept. 16 at Giannini Hall on the Berkeley campus.

The agenda for the school was planned by Dr. Richard Bahme, Western regional director for the Institute, and Dr. W. E. Martin, extension soils specialist of the agricultural extension service at the University.

Participants in the school will meet at Giannini Hall Sept. 16 for instruction on phosphate chemistry and production. The remainder of the day's activities include the following: 1:00 p.m., meet at Stauffer Chemical Co. in Richmond to view

sulfuric acid and superphosphate production; 2:30 p.m., depart for Hercules Powder Co. installation at Pinole to observe ammonia and urea manufacturing facilities, and 6:00 p.m., dinner meeting at Spenger's Restaurant in Berkeley.

The dinner will be sponsored by those chemical companies whose plants will be visited on the tour. The evening program will consist of educational movies of potash and phosphate mining and production, and a presentation by Dr. Bahme on the Institute's study on "Farmers' Attitudes Toward the Use of Fertilizer in the West."

The second day's program will open in Giannini Hall where the farm advisers will receive instruction on nitrogen chemistry and production. The

CROPLIFE, Aug. 25, 1958—17

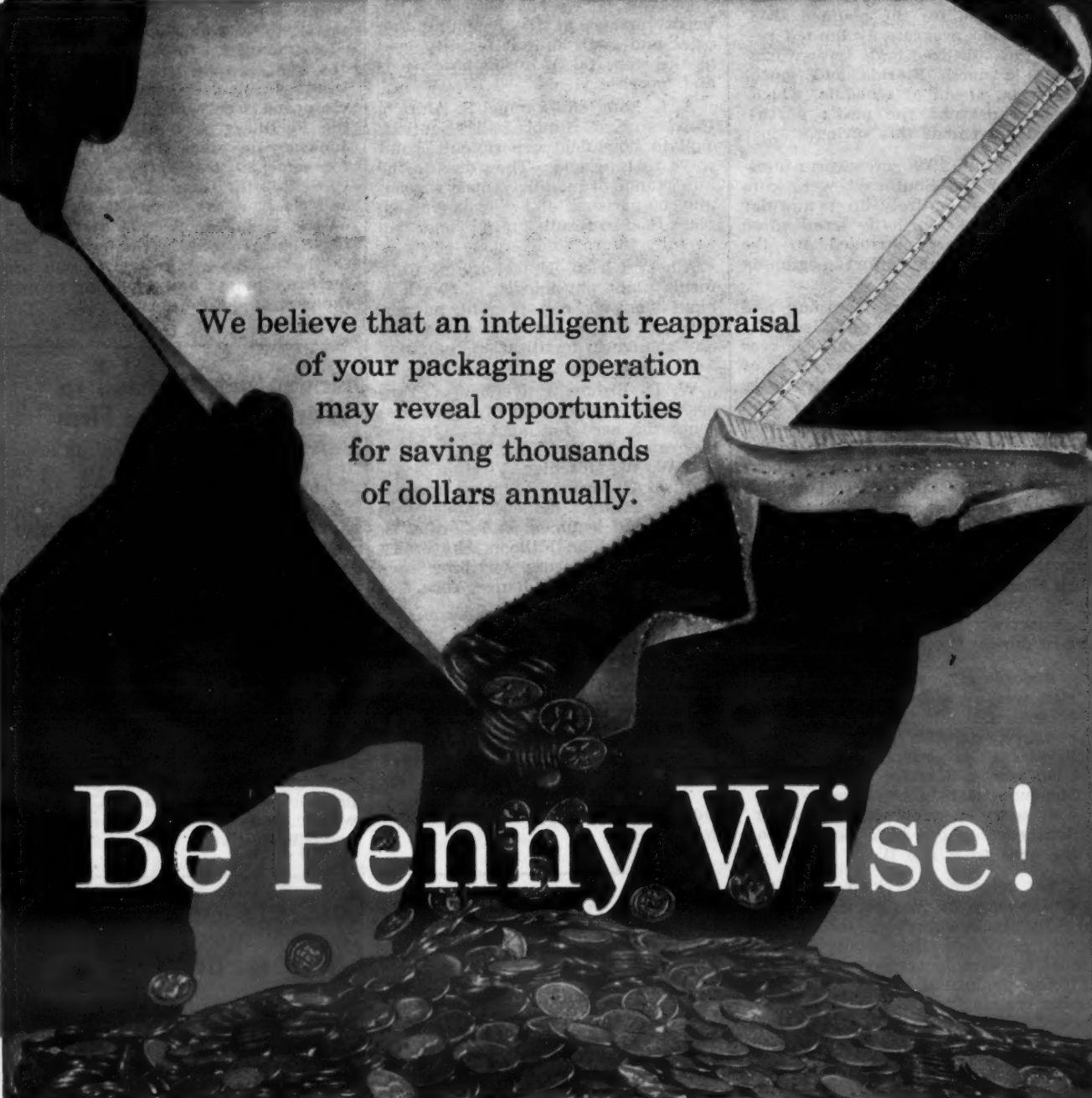
group will leave at 10:00 a.m., to visit Shell Chemical Co. facilities at Shellpoint.

The afternoon agenda will include the following: 1:00 p.m., visit Western States Chemical Corp. at Nichols to see green phosphoric acid facilities and mixed pelleted fertilizer operations; 2:30 p.m., depart for California Spray-Chemical Corp. to observe nitric-phosphate facilities.

The cooperating companies in the school will prepare information sheets on their respective processes and products, and will provide guides for the tours through their plants.

### IMC APPOINTMENT

CHICAGO—Norman M. Johnson has been appointed supervisor of sales services in the marketing division of International Minerals & Chemical Corp. He will develop sales incentive and compensation programs, allot quotas and territories, and initiate sales control systems.



We believe that an intelligent reappraisal of your packaging operation may reveal opportunities for saving thousands of dollars annually.

# Be Penny Wise!

## IN BUYING MULTIWALL BAGS NO SAVING IS TOO SMALL TO IGNORE!



THE KRAFTPACKER Open Mouth Bag Filling Machine, for free-flowing material, automatically saves pennies, too, through higher production and greater accuracy. Requires a lower investment and maintenance cost than any other automatic machine of its type in use today!

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Show me how to save on my multiwall bag packaging.

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## Screwworm Eradication Program Gets Big Start in Southeastern States, USDA Says

WASHINGTON—Only two cases of screwworms in livestock have been reported this year through Aug. 13 in the southeastern U.S. north of the Florida state line, according to a report by veterinarians of the U.S. Department of Agriculture and the state of Florida.

Dr. Robert S. Sharman, assistant to the director of the animal disease eradication division of USDA's Agricultural Research Service, and Dr. Clarence L. Campbell, Florida state veterinarian, reported favorably on the progress of screwworm eradication Aug. 20 at the annual convention of the American Veterinary Medical Assn. in Philadelphia.

They attributed the unusually low incidence of screwworms in the Southeast this summer to (1) the cold winter weather of 1957-58, which greatly reduced populations of this insect, and (2) the head-start gained for the planned 1958 eradication program by limited release of sterilized male screwworm flies in north Florida and south Georgia, ahead of schedule, which helped prevent the pest's northward movement this spring.

As a result, 1958 screwworm infestations in the Southeast were confined almost entirely to peninsular Florida. The sterile-fly eradication technique was expanded to the planned full-scale effort beginning July 11.

The report by Drs. Sharman and Campbell reflected the optimism that program leaders feel about chances of ridding the southeastern U.S. of this destructive pest of livestock, which costs producers in the area some \$20 million each year.

The full-scale eradication program was originally planned to start about mid-July. But state and USDA leaders of the program saw a way to take advantage of the severe winter kill of the insect by early release of sterile flies, especially across northern Florida. Their aim was to retard or prevent the usual migration of screwworms from that state northward during the spring and summer.

Accordingly, sterile-fly production was expanded to capacity at USDA's Orlando, Fla., entomology research laboratory, while the new fly-rearing laboratory at Sebring, Fla., was still under construction. Measures were also taken to prevent entry of screwworms into the Southeast on livestock moved into the area from the West.

The veterinarians said that the early release of flies provided relief for livestock owners in the treated area, restricted the inevitable seasonal increase in screwworms to the Florida peninsula, and provided valuable training for personnel who are now fighting the main battle against this insect.

They pointed out that the screwworm program is based on an entirely new method of eradicating pests causing livestock disease. This sterile-fly procedure was developed through years of research by USDA entomologists. The discoveries, starting in 1946, that made the present program possible included:

1. The finding that female screwworm flies mate only once.
2. Discovery that screwworms can be sterilized in the pupal stage by exposure to gamma rays. (Native females mated to sterilized males produce only infertile eggs.)
3. Development of laboratory techniques that make it possible to produce large numbers of sterile flies in captivity.

Eradication is based on the fact that systematic release of enough sterile males will cause a gradual decline in the fly population until the

pest is wiped out. Proof that continued release of sterile flies will eventually result in eradication was obtained in 1954, when this procedure was used to eliminate the screwworm from the Caribbean island of Curacao.

### Potash Institute Issues "Hidden Hunger" Booklet

WASHINGTON—A new handbook, "Hidden Hunger in Crops" has been published by the American Potash Institute.

Featuring illustrated articles by several authorities in their fields, the 48-page handbook explains how various research tools can be used to guide farmers through the hidden hunger zone toward the most profitable yield levels.

H. L. Garrard, Institute agronomist, introduces the handbook with a look at the various degrees of nutrient hunger, at the changing theories and goals in soil fertility, and at the steps taken to diagnose needs and increase yields.

A. L. Lang and Samuel R. Aldrich, University of Illinois soil scientists, explain how field experiments point ways to top yields. They discuss the importance of making proper agronomic comparisons, and of using enough plant food so results on top yields can be fully interpreted.

Albert Ulrich, University of California plant physiologist, shows how plant analysis can prevent hunger, and how it is a tool that can detect any change in fertilization that may need correcting.

W. D. Bishop, University of Tennessee extension agronomy head, presents the need for good soil testing programs; R. E. Blaser, C. Y. Ward and W. W. Moschler, Virginia Agricultural Experiment Station agronomists, discuss hidden hunger in grasses and legumes; and Gordon B. Nance and John Falloon, University of Missouri, discuss fertilizer economics in the hidden hunger zone.

An Oregon State College soil scientist, T. L. Jackson, sums up the approach by discussing fertilization for maximum yields. To get top yields, he contends, the farmer must be able to predict the fertilizer needs for each crop on an individual basis.

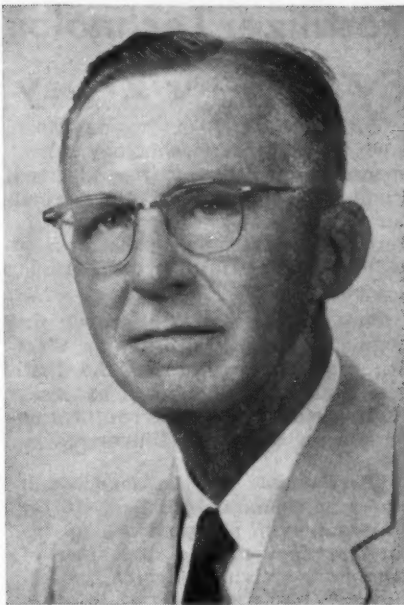
Free copies of the handbook are available through the News Service of the American Potash Institute, 1102 16th St., N.W., Washington 6, D.C.

## Aerial Sprayers and Dusters on Increase To Control Pests on Larger Farms in U.S.

NEW YORK—With favorable conditions for employment of custom operators throughout much of the summer, plus unusual infestations of grasshoppers and other agricultural pests in different parts of the country, the 1958 season is likely to set new records for the use of airplanes. In an article based on an around-the-country roundup of information, the Wall Street Journal in a recent issue gave its readers a thorough over-all picture of the crop spraying and dusting industry. Here are some of the facts and figures presented by that paper:

Aerial operators, the article said, have applied insecticides to control boll weevils, fire ants, Mediterranean fruit flies, Japanese beetles, grasshoppers and mosquitoes. The planes have also operated to control both the spruce budworm and the gypsy moth, as well as to seed rangeland and woodlands.

This year, the Journal said, the National Aviation Trades Assn. estimates a record application of \$107 million in pesticides to treat some 60



W. A. Stone



S. M. McCargo

**SAFETY CONFERENCE SPEAKERS**—Scheduled to appear on the speaking program during the annual meeting of the Fertilizer Section of the National Safety Council at the LaSalle Hotel in Chicago, Oct. 21, are S. M. McCargo, safety director for GLF Soil-Building Service, Ithaca, N.Y. and W. A. Stone, superintendent of Wilson & Toomer's fertilizer plant at Jacksonville, Fla. Mr. McCargo has been with GLF since 1945 in the capacities of manager of farm chemicals, technical field representative, and as personnel supervisor and safety director. He is a member of the executive committee of the Fertilizer Section of NSC. Mr. Stone has been superintendent of the Jacksonville plant for eight years, and had worked in fertilizer industry for some 20 years previous to that. He was formerly associated with the F. S. Royster Guano Co. and the Acme Fertilizer Co. before joining Wilson and Toomer. Mr. Stone is likewise a member of the executive committee of the Fertilizer Section and a past chairman of the fertilizer section of the Southern Safety Conference. The Chicago meeting in October is open to the fertilizer industry. It will provide information on safe operation of fertilizer plants and a pooling of experience gained through many years on the part of speakers.

### Naugatuck Division to Work with Italian Firm

NEW YORK—United States Rubber Co. and the Rumianca Co. of Turin, one of Italy's largest chemical firms, have announced that they would jointly form a new company in Italy to manufacture and sell a line of chemical products developed and manufactured by the Naugatuck Chemical division of U.S. Rubber Co.

The new company, to be called Naugatuck-Rumianca, S.p.A., will have its headquarters in Turin and its manufacturing plant in Borgaro Torinese, a suburb of Turin. Among the products it will make and sell are a group of agricultural chemicals, industrial chemicals and a series of chemical specialties. The products, patented by Naugatuck Chemical, will be made and sold on an exclusive basis in Italy, and sold on a non-ex-

clusive basis in several other countries.

Until the new firm's manufacturing plant is erected, Naugatuck-Rumianca plans to import and sell in Italy all of Naugatuck Chemical products. The rubber company's chemical division operates seven plants in the United States.

Rumianca has been a chemical producer for more than 40 years. Its products include heavy chemicals, industrial chemicals and fertilizers. The products to be made and sold by the new firm will supplement Rumianca's present line.

Ownership of the new firm will be jointly divided between Rumianca and U.S. Rubber.

### Massachusetts Prof. Retires August 29

AMHERST, MASS.—Prof. Lawrence S. Dickinson, who has been on the staff of the University of Massachusetts for some 45 years, will retire Aug. 29, the University has announced. Prof. Dickinson is the senior professional staff member from the standpoint of length of service on the campus.

He was appointed to the agronomy faculty of the University in 1913, and became a national authority on turf management. Among his accomplishments over the years was his founding of the 10-week short course for turf managers, and a two-year course in turf management as part of the school program.

Prof. Dickinson has handled the academic activities organization since 1915, a position he has held full time since last January. He is a member of the American Society of Agronomy, and is prominent in New England agronomic activities.

### FIVE EMPLOYEES RETIRE

NORFOLK, VA.—Smith-Douglass Co. has announced the retirement of five employees of its Norfolk plant, representing 78 years of service to the company. The group retired after ceremonies at the plant. They are: H. L. Dean, R. R. White, Christopher Pierce, Bennie Gatling and James Smith.



## California Fertilizer Tests Show Importance of Timing, Placement on Tomato Yields

BERKELEY, CAL.—Slow growth of field-seeded tomatoes and purple coloring of the leaves shortly after emergence may indicate a phosphorus deficiency, according to a progress report made on studies by John C. Lingle, J. P. Underhill, M. P. Zobel and Torrey Lyons, of the University of California and published in "California Agriculture."

The experiment, covering 48 fertilizer trials on canning tomatoes, almost entirely with transplants in the major producing counties, resulted in 24 trials showing responses to nitrogen and four to phosphorus. None, according to the report, showed benefit from the use of potassium.

To determine the influence of close placement of nitrogen and phosphorus on the yield of field seeded canning tomatoes a trial plot was established near Tracy in 1956. Close placement—2 in. below the seed—was compared to larger amounts of the same fertilizers placed 6 in. below and 6 in. to the side of the seed, applied at time of planting. Treatments receiving a small amount of phosphate close to the seed gave early—first-pick—yields significantly higher than with other treatments, and total yields were significantly higher than the check.

Early and total yields were not increased over the check by a larger amount of phosphate placed at greater distances from the seed. Apparently, the influence of phosphate was early in the growth cycle, and effective placement was essential for yield response. At harvest it was estimated that as much as three tons an acre were lost from overripe fruit in the close-placement plots. Total yields were not much stimulated, indicating that the main influence of the treatments might be earlier maturity of the fruit.

Plant tissue samples—taken from all plots on July 7 and August 24—were analyzed for total nitrogen, phosphorus, and potassium. The data obtained from the analyses correlated poorly with the treatments, especially in phosphorus. In some instances, plots that received phosphorus placed under the seed produced plants with lower phosphorus concentrations than those of the plants in the check plot. Plant growth, stimulated by the effect of the close-placed phosphorus, had probably diluted any higher phosphorus concentration that may have existed earlier.

Larger amounts of phosphorus placed further from the plants increased phosphorus concentration on the first sampling date, but this was not reflected in plant growth. A similar condition existed in nitrogen concentrations on the sampling dates. Potassium concentrations were not affected by treatment, nor was there any evidence that this element had any effect on fruit quality.

Similar trials were conducted in several locations in 1957. To measure growth, the fresh weights of plants were determined at thinning time and growth increases were just as marked as in previous trials. In all trials, plant weights at thinning time were 3-4 times as great with fertilizer placed under the seed as with no preplant fertilizer.

Several variations in placement and amounts of under-seed fertilization were compared. Phosphorus seemed to be the most important nutrient considered in close placement trials. The addition of nitrogen to the fertilizer increased seedling growth only slightly in one test. Addition of

potassium likewise had little effect—except in a test near Stockton, in a soil where soil tests had indicated that potassium supply might be somewhat limited.

Plant growth was not detectably different when fertilizers were placed 4 in. under the seed instead of 2 in. Doubling the rate of application—to 40 lb. nitrogen and 50 lb. phosphorus pentoxide an acre—definitely increased the growth of the plants, but the effect generally disappeared shortly after thinning.

Accurate fruit yield records were difficult to obtain in 1957. Extremely hot weather in June and July delayed fruit set, which may have reduced the earlier maturity observed in previous years. Furthermore, unseasonable rains cut short the harvest season, and in most plots several tons of tomatoes an acre were left in the field. Yield

records of one plot were not taken, because of nematode infestation. Generally, close placement of fertilizer under the seed—either phosphorus or phosphorus plus nitrogen—produced greater early yields of fruit, but total yields were not greatly affected.

In one trial in San Joaquin County—on Staten Island—liquid 8-24-0 was used instead of the dry fertilizer used in the under-seed fertilizer treatment. Results from this test were quite comparable to the others in the effect of fertilizer on both plant growth and early yield.

The main effect of close placement of fertilizer may be an indirect one. The fertilizer stimulates growth to such an extent that fertilized plants are much larger when environmental conditions permit fruit set to begin. Flowers that set at one time, which results in greater early yields.

Some indirect benefits are also apparent. Close placement stimulates a more vigorous root system, which allows the plant to explore the soil mass for other needed nutrients. Faster growth of the seedling considerably simplifies the weed control problem, since closer cultivation can be practiced at an earlier date. It also provides a shorter period of

susceptibility to seedling insect pests. This provides a greater number of such as flea beetles.

The results of the placement trials—coupled with previous fertilizer trials—can be translated into generalized fertilizer treatments for this crop. Treatments of 10-20 lb. an acre of nitrogen and 25 lb. phosphate—phosphorus pentoxide—placed 2 in.-4 in. directly beneath the seed should be applied at planting time. About 60 lb. nitrogen in the ammoniacal form, should be applied as a side-dressing shortly after thinning. The small amount of nitrogen applied at planting is probably not sufficient for maximum yields, and larger amounts might lead to germination troubles or be leached from the soil before the plants can use it.

Similar trials—continuing in 1958—are designed to study the effect of these fertilizer practices on direct-seeded tomatoes growing on a wider range of soil types and climatic conditions.

### JOINS MOLYBDENUM FIRM

DETROIT—Dr. E. C. Herrick has been appointed chemical research supervisor for the Detroit research laboratory of Climax Molybdenum Co. of Michigan, a subsidiary of American Metal Climax, Inc.

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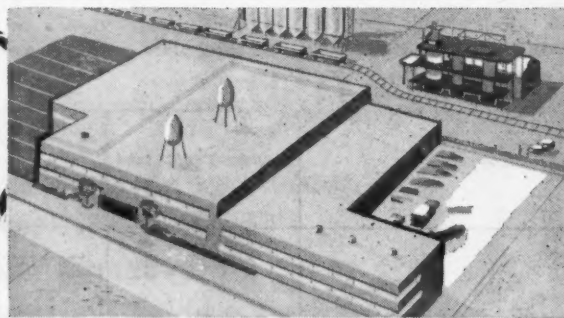
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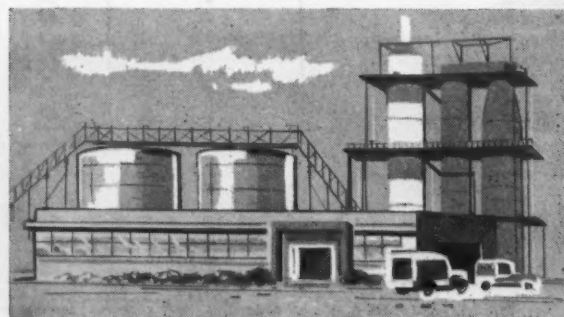
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## FERTILIZER USE

(Continued from page 1)

nage on all crops and cropland pasture is applied east of the Mississippi River.

The map in Figure 1 shows the variations over the country in the percentages of harvested acreage fertilized. Generally the percentage fertilized is highest in the Southeast, the Middle Atlantic, and East North Central states, and in the irrigated Southwest. It is lowest in the dryland farming areas of the Great Plains and in non-irrigated areas of the Mountain states.

Patterns formed by variations in the percentage of the acreage fertilized frequently coincide with soil association areas. A few of the more obvious examples are listed below:

1. Percentage fertilized of the Piedmont Plateau soils in Alabama, Georgia, and South Carolina is lower than the adjacent Coastal Plains soils.

2. A smaller percentage of the Blackbelt soils in northeast Mississippi and central Alabama are fertilized than the surrounding soils.

3. The belt of deep loess hill and terrace soils extending north and south in Mississippi and western Tennessee generally are less widely fertilized than the adjacent alluvial soils to the west or the shallow loess, acid sand soils to the east.

4. Alluvial soils of the Red River Valley of Louisiana are more widely fertilized than the adjacent Coastal Plain soils.

5. Muskingum and related soils of the Allegheny-Cumberland Plateau in southeastern Ohio are less widely fertilized than those in the remainder of the state.

6. The till-plain Clarion-Nicollet-Webster, Kenyon-Floyd-Clyde, and Skyberg-Cresco-Clyde soils of north central and northeastern Iowa, are more widely fertilized than the Fayette-Seaton soils to the east or the Tama-Muscataine-Sable, Shelby-Sharpsburg, Mohaska-Taintor, and Shelby-Seymour-Edina soils to the south. In western Iowa, the Monona-Ida-Hamburg are more fertilized than the adjacent Marshall soils to the east or the Galva-Primghar-Sac

and Moody-Crofton soils to the north.

7. The Kenyon-Floyd-Clyde and Skyberg-Cresco-Clyde soils in the southeastern portion of Minnesota are more widely fertilized than the adjacent Clarion-Nicollet-Webster or the Fayette-Seaton soils.

8. The Fargo-Bearden soils of the Red River Valley of western Minnesota and eastern North Dakota are more fertilized than adjacent soils.

Differences in percentages of acreage fertilized amongst soil association areas, however, may be influenced by factors other than soil characteristics. Type of farming particularly is intimately inter-related with the soil association areas and the two cannot be clearly segregated. For example, livestock farming predominates over cotton farming in the Blackbelt soil area of Alabama where the percentage of the acreage fertilized is lower than surrounding areas. On the surrounding areas, however, cotton and general farming predominates.

Generally, but not always, the highest percentage of the acreage fertilized is associated with areas of fruit and truck, tobacco, and specialty crops farming in the eastern states and with irrigated farming in the western states.

State lines often account for marked changes in the pattern of the acreage fertilized. In many instances where a state line bisects a soil association area, the percentage of the acreage fertilized changes. Such differences apparently reflect differences in the extension and education programs, the kind of fertilizer recommendations being made, or the type of conservation payments.

The maps in Figures 2, 3, and 4 show the estimated quantities of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O applied per fertilized acre for all crops and cropland pasture during 1954.

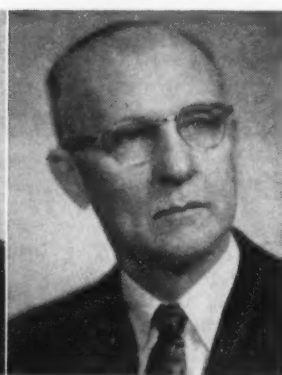
Type of farming appears to exert the dominant influence upon rates of N per fertilized acre. Nitrogen additions in excess of 50 lb. an acre are associated with the western irrigated areas; with the intensive vegetable,



Dr. J. R. Adams



Dr. L. B. Nelson



D. B. Ibach

**AUTHORS**—Drs. Adams and Nelson are with the Soil and Water Conservation Research Division, and Mr. Ibach is with the Farm Economics Research Division, Agricultural Research Service, USDA. Their statistical work on Fertilizer Use Patterns in the U.S., published in *Croplife*, is being presented in nine installments. This is Part 2 of the series. Upon completion, the entire work will be available in reprinted booklet form.

potato, tobacco, or specialty-crop areas in New England, the Middle Atlantic states, and Florida; with the sugar cane producing area in the Mississippi Delta of southern Louisiana; and with the specialized cotton-growing areas of the alluvial lands of the Mississippi and Red rivers. Of particular interest is the high nitrogen using area in northeast Alabama. This area is devoted to well-managed, family-operated small farms where the farmers have traditionally practiced intensive fertilization.

Nitrogen use in the more arid parts of the western United States is limited largely to irrigated lands. For example, 95% of the nitrogen tonnage consumed on all crops and cropland pasture in California and 92% in Utah are applied to irrigated lands.

There are certain types of farming situations under which low N rates prevail. In the dairy farming areas of Minnesota, Wisconsin, northwest Iowa, northeastern Ohio, Michigan, Pennsylvania, and northern Maryland, N applications average 19 lb. or less per fertilized acre. This apparently is a reflection of the large amounts of manure returned to the land along with use of legume rotations.

Southern Illinois and west central Missouri also depend largely on dairy and livestock farming and, as a result, use low N rates. The northern wheat growing areas of Montana, North Dakota, and South Dakota use low N rates as do the strictly dryland farming areas in Kansas, Oklahoma, and Texas.

The relationship between rate of N and type of farming is demonstrated particularly in North Carolina and Virginia. For the two states, the truck crop and peanut-growing areas average 55 lb. N per fertilized acre, the flue-cured tobacco farming areas average about 40 lb., and the general farming areas average 27 lb.

Applications of P<sub>2</sub>O<sub>5</sub> per fertilized acre generally are highest in the Northeastern and Appalachian states, along the Coastal Plain of South Carolina and Georgia, all of Florida, in certain of the irrigated areas of the Great Plains and Far West, and in the humid area west of the Cascade Mountains in Washington.

Phosphate-use patterns occasionally appear related to soil areas. The alluvial soils of the lower Mississippi and Red River Valleys generally receive lower rates of P<sub>2</sub>O<sub>5</sub> than other humid region soils. In fact, the average for the 5,500,000 fertilized

TABLE 1—Estimated use of primary plant nutrients on major crops in the United States during 1954.<sup>1</sup>

Crop	Acreage Fertilized	Average rate per fertilized acre			
		Nitrogen	Available phosphoric oxide	Potash	Total
	Percent	-----Pounds-----			
Corn	60	27	28	25	80
Wheat	28	18	27	19	64
Oats and barley	30	17	28	20	65
Cotton	58	49	31	25	105
Tobacco	97	60	121	117	298
Sugar Crops	91	58	46	14	118
Large seeded legumes	23	7	33	32	72
Fruits	58	78	33	40	151
Potatoes and sweetpotatoes	78	71	108	98	277
Vegetables	63	59	84	66	209
Hay and cropland pasture	10	12	40	29	81

TABLE 2—Total acreage fertilized and percentage distribution of plant nutrient use by crops in the United States during 1954.

Crop	Total acreage fertilized (1)	Nutrient Use			
		Nitrogen	Available phosphoric oxide	Potash	Total
	1000 acres	---Percent of the United States total---			
Corn	46,873	35.3	30.2	33.5	32.8
Wheat	14,034	7.0	8.7	7.7	7.8
Oats and barley	14,781	7.1	9.4	8.4	8.4
Cotton	10,948	15.1	7.6	7.6	9.9
Tobacco	1,513	2.5	4.2	3.0	3.9
Sugar crops	1,063	1.7	1.1	0.4	1.1
Large seeded legumes	4,831	1.0	3.6	4.4	3.0
Fruits	2,422	5.3	1.8	2.7	3.2
Potatoes and sweetpotatoes	1,144	2.3	2.8	3.2	2.8
Vegetables	3,642	6.0	6.9	6.8	6.6
Hay and cropland pasture	12,672	4.2	11.6	10.5	9.0
All other (including non-farm)	-----	12.3	12.1	9.8	11.3
		100.0	100.0	100.0	100.0

Table 3. Crops and cropland pasture: Acreage harvested and percent fertilized, and estimated use of fertilizer and primary plant nutrients, by states, 1954.

State	Total acres harvested 1	Harvested acres fertilized (1)	Fertilizer applied 2	Rate of application of nutrients per fertilized acre (1)		
				Nitrogen	Available phosphoric oxide	Potash
	1,000 acres	Percent	1,000 tons	-----Pounds-----		
Alabama	6,560	67	1,101.2	35	39	28
Arizona	1,419	56	134.2	82	31	2
Arkansas	8,064	40	355.7	31	16	25
California	11,301	37	1,073.0	65	29	7
Colorado	6,227	7	45.7	34	56	3
Connecticut	418	34	87.0	60	96	99.
Delaware	507	64	92.2	35	60	61
Florida	2,917	65	914.0	67	63	78
Georgia	7,585	75	1,250.9	28	35	34
Idaho	4,272	21	81.7	26	32	< 1
Illinois	23,105	34	1,484.4	21	31	38
Indiana	13,314	60	1,166.5	19	37	40
Iowa	25,574	27	645.9	21	29	13
Kansas	22,732	17	210.3	17	22	2
Kentucky	9,478	28	561.2	23	47	41
Louisiana	5,039	48	289.1	39	19	14
Maine	1,041	25	169.1	87	140	155
Maryland	2,006	70	289.1	17	38	35
Massachusetts	476	33	57.3	42	53	64
Michigan	9,546	47	571.9	13	34	33
Minnesota	20,941	20	319.5	12	31	18
Mississippi	7,181	59	703.6	53	21	17
Missouri	16,727	36	732.1	24	26	21
Montana	9,344	7	27.1	9	25	0
Nebraska	20,024	15	190.6	35	16	1
Nevada	614	4	3.2	40	69	6
New Hampshire	334	19	14.3	28	53	16
New Jersey	985	62	283.7	53	93	86
New Mexico	1,540	15	22.2	35	39	< 1
New York	6,984	32	597.6	30	55	39
North Carolina	6,594	78	---	41	51	46
North Dakota	21,995	8	47.3	3	20	2
Ohio	12,078	54	1,019.5	14	38	36
Oklahoma	12,749	15	130.8	11	22	5
Oregon	4,075	31	124.4	38	18	4
Pennsylvania	6,441	48	580.8	16	41	33
Rhode Island	58	76	12.5	29	61	61
South Carolina	4,352	75	834.2	36	39	37
South Dakota	18,627	3	29.5	15	24	1
Tennessee	8,098	38	485.8	24	33	28
Texas	32,453	13	521.9	32	31	8
Utah	1,491	11	24.5	51	46	< 1
Vermont	1,004	19	34.6	13	56	49
Virginia	4,496	47	720.1	36	62	60
Washington	5,095	37	146.9	38	14	5
West Virginia	1,653	21	68.3	48	48	34
Wisconsin	12,173	32	426.0	10	30	36
Wyoming	2,014	7	---	27	44	1

<sup>1</sup> Preliminary figures (2).

<sup>2</sup> Estimates based on data from Soil and Water Conservation Research Division, U.S. Department of Agriculture.



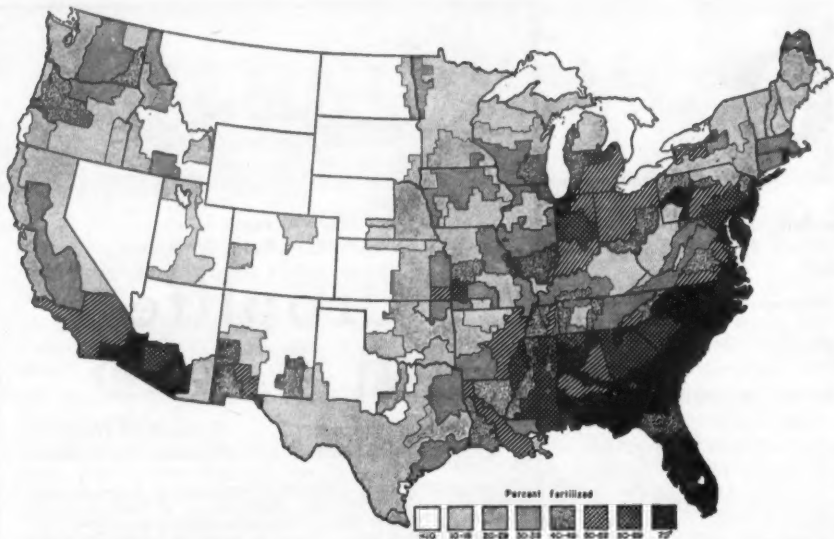


FIGURE I—The percent of harvested acreage fertilized for all crops and cropland pasture during 1954.

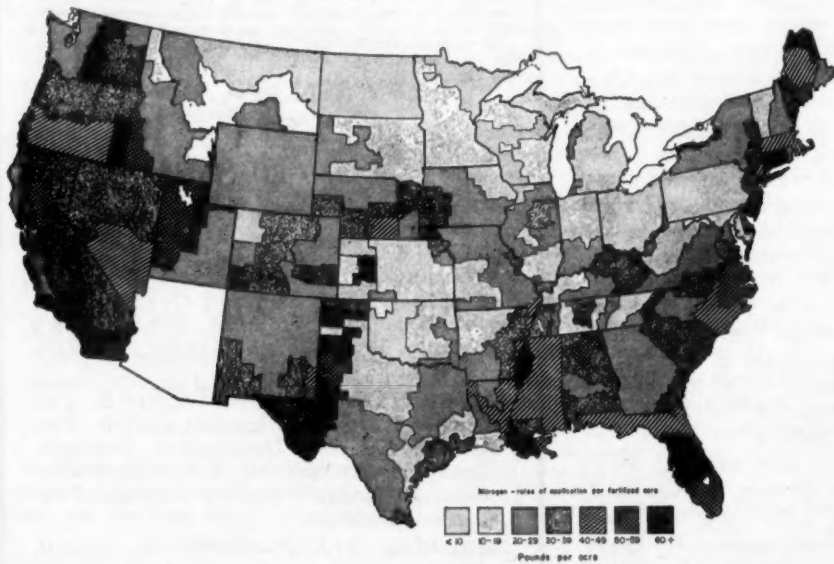


FIGURE II—The estimated rates of N used per fertilized acre for all crops and cropland pasture during 1954.

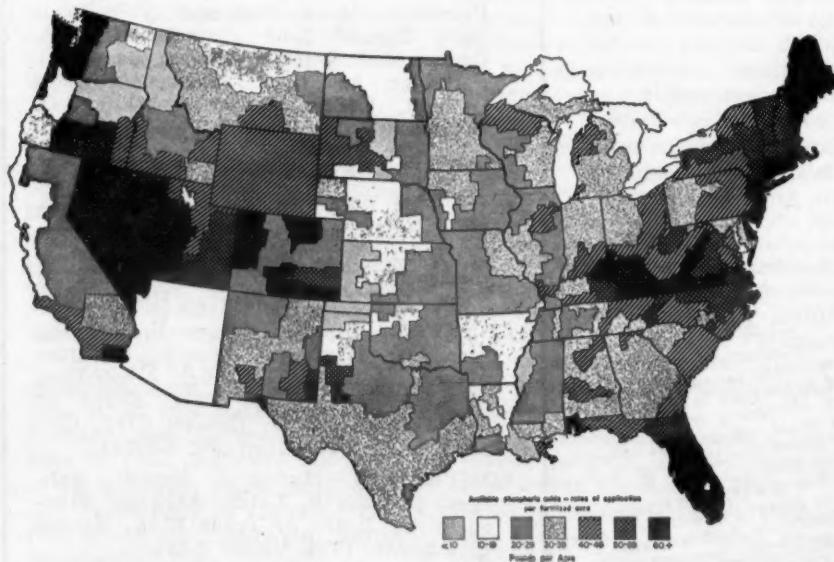


FIGURE III—The estimated rates of available  $P_2O_5$  used per fertilized acre for all crops and cropland pastures during 1954.

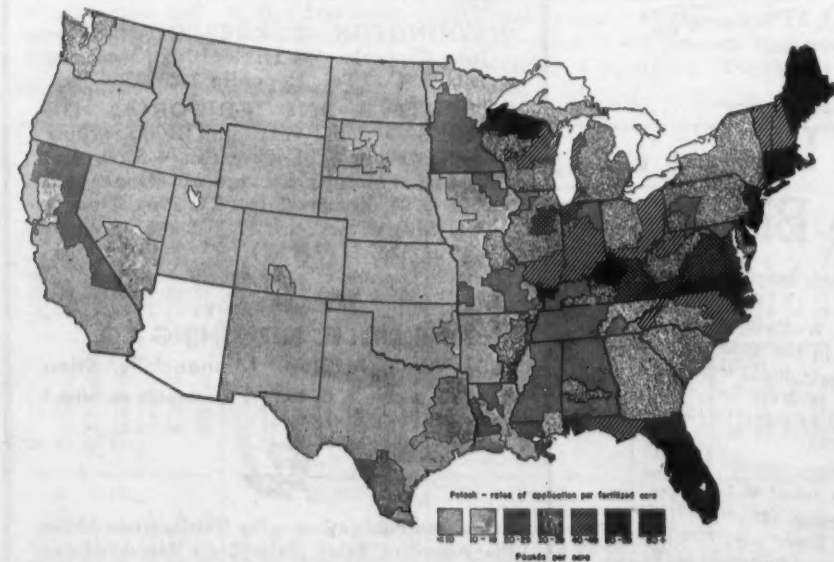


FIGURE IV—The estimated rates of  $K_2O$  used per fertilized acre for all crops and cropland pastures during 1954.

acres of these soils is only 9 lb. of  $P_2O_5$  an acre.

Several soil areas receive higher rates of  $P_2O_5$  than surrounding areas. For example, the Blackbelt and the Appalachian Plateau soils of Alabama and the lower Coastal Plain and Tidewater soils of Georgia all receive higher rates than adjacent soils in the same state.

Very little  $K_2O$  is applied on the fertilized acreage of the 17 western states. The only exceptions are California and western Washington. The low  $K_2O$  rates reflect the high potassium-supplying power of most of the western soils.

In the states east of the Mississippi River, the largest quantities of  $K_2O$  an acre are applied in New England, Long Island, New Jersey, Delaware, Virginia, parts of North Carolina, Florida, the Bluegrass and Eastern Mountain Regions of Kentucky, southern and eastern Ohio, Indiana, the central heavy-till and the southern claypan soil area in Illinois, east-central and northern Wisconsin, and along the lake shore in western Michigan. In many instances, areas receiving high  $K_2O$  rates are devoted largely to intensive vegetable, truck, tobacco and specialty crop types of farming. In the north-central states, however, high rates appear associated most closely with K-deficient soils.

Very low  $K_2O$  rates are applied on the Mississippi River alluvial soils in Mississippi. Also, the Blackbelt soils of Alabama receive lower rates than adjacent areas, while  $K_2O$  rates in Georgia and South Carolina generally are lower than those of adjacent states.

Relationships between kind of soil and  $K_2O$  applications exist most frequently in the tier of states extending south from Minnesota through Louisiana ap-

parently because the soils in these states represent the transition between potassium-deficient soils to the east and potassium-sufficient soils to the west. Very low rates are associated with the Fargo-Bearden soils of the Red River Valley in Minnesota, the loessial and bottomland soils of western Iowa, and the Mississippi River Delta soils in southern Louisiana. All of these soils are known to have adequate supplies of available potassium.

On the other hand, the Kenyon-Floyd-Clyde and the Skyberg-Cresco-Clyde soils in northeastern Iowa, all soils in the eastern half of Missouri, and the middle and upper Coastal Plain soils in Louisiana are potassium-deficient and receive moderate rates of  $K_2O$ . Interestingly, the alluvial soils in eastern Arkansas receive higher  $K_2O$  rates than the other soils in the state. This is opposite to that found in Louisiana.

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- (1) Ibach, D. B., Adams, J. R., and Markeson, C. B.  
1957. Fertilizer Used on Crops and Pasture in the United States. 1954 Estimates. U.S. Dept. Agr., Statist. Bul. 216, 55 pp. illus.
- (2) United States Bureau of the Census.  
1955. Census of Agriculture: 1954.

### WASHINGTON REPRESENTATIVE

WASHINGTON — Appointment of Donald Lerch, Jr., & Co., as its representative in the nation's capital, has been announced by Ruder & Finn International, public relations counselors. The Lerch organization will be a key member of the 43 country international network operated by Ruder & Finn International.

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# Croplife

A WEEKLY NEWSPAPER FOR THE FARM CHEMICAL INDUSTRY

The regional circulation of this issue is concentrated in the Western states.

## Croplife Readers Get Straight Goods on Farm Bill

CROPLIFE readers whose pesticide and fertilizer business plans for 1959 are dependent to a degree upon whether or not there would be a farm bill forthcoming in the current session of Congress have been told for the past several weeks that there would be a farm bill enacted. Despite strong opinions to the contrary on the part of Washington pundits writing for the wire services and other media of information, John Cipperly, Croplife's Washington correspondent, steadfastly held to the thesis that there WOULD be a farm bill.

While we do not feel that it is proper for a paper to boast, yet in this instance we consider it well within the bounds of propriety to point out that Croplife's readers have been given the straight goods concerning Congressional actions in the capital.

Below are clippings from Croplife of Aug. 4 and Aug. 11, with newspaper and news magazine clippings published about the same time. Mr. Cipperly said on Aug. 4: "It is confidently expected the House will be compelled to accept the Senate version (of the farm bill) and enact it without major changes, if any at all."

The next week, he assured Croplife readers: "It is confidently expected in official circles that Congress will take another and more favorable view of the Senate-passed farm bill and will promptly enact it."

At the same time, newspapers were carrying the news as indicated in the Associated Press story below: "New farm legislation appears dead for this session of Congress . . ." Newsweek, in its issue of Aug. 18, said: "The farm bill that Agriculture Secretary Benson wanted is dead for this session . . ."

As we say, we do not wish to boast unduly . . . what is recorded here should not be interpreted as a brag. We wish merely to assure readers of this paper that they can rely upon the information found in its columns.

In a private exchange with Mr. Cipperly last

week, he wired: "Croplife readers should depend on accurate and authoritative information from Croplife and not on press reports emanating from here through wire associations. There will be a farm bill and it will be approximately along the lines noted earlier. The chemical industry can safely set its sales targets on that bulls-eye."

## Optimum Use of Fertilizer Means Extra \$100 Million

THAT the use of five times the present amounts of fertilizer would give good economic returns to farmers in Southern Minnesota, was a point made by Dr. E. H. Hartmans, University of Minnesota agricultural economist in his talk at the recent meeting of the American Society of Agronomy at Purdue University.

He said that only farmers with unlimited capital can afford to aim at maximum net return per acre, but when capital is limited, as it is in all but a small percentage of cases, the aim should be at a yield level where the last dollar invested in fertilizer will return as much as it would somewhere else in the farm business. "Since this level is extremely difficult to determine at any given time, a safe general goal would be to fertilize to the point where the last dollar of fertilizer will give approximately \$1.50 in return."

"This goal, applied to the best southern Minnesota cropping area would dictate the use of 5 times as much fertilizer as is presently used and would mean an extra income potential of \$100 million in cash crops on approximately 8 million acres. Fertilizer properly used is one of the best investments a farmer can make today. Through its use he can (1) effectively lower the cost per unit of product and in that way combat the falling price level of farm crops, and (2) increase the size of his farm business for livestock through increased yields and an expanded feed supply."

"This is very important where acreage expansion of the present unit is limited. However, even if additional land is available the use of fertilizer to enlarge the business might often be more economical."



Croplife's Home Office

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CROPLIFE is a controlled circulation journal published weekly. Weekly distribution of each issue is made to the fertilizer manufacturers, pesticide formulators and basic chemical manufacturers. In addition, the dealer-distributor-farm adviser segment of the agricultural chemical industry is covered on a regional (crop-area) basis with a mailing schedule which covers consecutively, one each week, four geographic regions (Northeast, South, Midwest and West) of the U.S. with one of four regional dealer issues. To those not eligible for this controlled distribution Croplife subscription rate is \$5 for one year (\$8 a year outside the U.S.). Single copy price, 25¢.

LAWRENCE A. LONG

Editor

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CROPLIFE, August 4, 1958

By JOHN CIPPERLY  
Croplife Washington Correspondent

WASHINGTON — The farm bill which passed the Senate by a substantial majority would create a new economic environment for such crops as cotton, corn and rice, calls for a re-examination of fertilizer and pesticidal chemical industry sales plans for those crops in 1959 and subsequent years.

Notwithstanding publicly-spoken opposition from Democratic members of the House, it is confidently expected the House will be compelled to accept the Senate version and enact it without major changes, if any at all.

Briefly, in principle, the Senate farm bill accomplishes these major objectives:

1. It ends the concept of parity as a standard from which levels of price support are computed, and in its place it adopts the average market price for these crops for the previous three years at levels of . . . at between 60-90% of such . . . concession to a

### Setback for Benson

The farm bill that Agriculture Secretary Benson wanted is dead for this session.

Speaker Sam Rayburn buried farm legislation, including a bill passed by the Senate to change the parity formula and lift acreage restrictions on cotton, corn, and rice farmers.

Benson hoped cotton and rice farmers would put pressure on the House, and Rayburn would change his mind.

But cotton farmers are getting good prices, and so are wheat and feed-grain farmers. The result: No pressure on Farm Belt Congressmen—and they've about given up for now

Newsweek, August 18, 1958

## Cotton Pressure To Insure Passage Of New Farm Law

By JOHN CIPPERLY  
Croplife Washington Correspondent

WASHINGTON—Despite the fact that farm legislative machinery is stalled on dead center, every available bit of information indicates that Congress will pass a farm bill very close to the provisions of the bill already approved by the Senate.

Unofficial and preliminary data made available last week to Croplife report will show the necessity of cutting back cotton acreage allotments for the 1959 crop to the bone.

This preliminary data indicates that no matter what the level of the August cotton crop estimates . . . total disappearance . . . and ext

CROPLIFE, Aug. 11, 1958—21

will be so substantially reduced that it will be necessary for the U.S. Department of Agriculture to bring cotton acreage allotments down to a point which would restrict total cotton production for the 1959 crop to not more than 10 million bales.

Observers here say that the cotton area legislators cannot live with such a condition. Once these conditions are known, it is confidently expected in official circles that Congress will take another and more favorable view of the Senate-passed farm bill and will promptly enact it. This will create for 1959 and 1960 cotton crops a basic minimum acreage of 16 million plus.

Ragweed Problem i-

## Hopes for Farm Law Die With House Bill

WASHINGTON — (AP) — New farm legislation appears dead for this session of congress.

The death sentence was pronounced Wednesday by Speaker of the House Rayburn of Texas in the wake of the second crushing setback suffered by agricultural legislation this year, and the third during this congress.

"We have been up and down this hill as many times as I care to go this year," Rayburn declared.

Ike S: ns

His pronouncement followed house defeat of a new farm bill going far in the direction of lower price supports sought by Secretary of Agriculture Ezra T. Benson, t . . . opposed by a majority of f



# MEETING MEMOS

Aug. 31-Sept. 4—National Assn. of County Agricultural Agents, Annual Meeting, Olympic Hotel, Seattle, Wash.

Sept. 4-5—Forest Fertilization School, University of Washington, Pack, Wash.

Sept. 10—Agronomy Fall Field Day, Lincoln, Neb.

Sept. 10-11—Midwest Regional Accident Prevention School for Supervisory Personnel of the Fertilizer Industry, National Safety Council Headquarters, Chicago.

Sept. 11—Field Day, Northern Virginia Pasture Research Station, Middleburg, Va.

Sept. 11—Agronomy Farm Field Day, Purdue University Agronomy Farm, Lafayette, Ind.

Sept. 12—Agronomy Field Day, University of California, Davis, Cal.

Sept. 16-17—Farm Advisers Fertilizer Technology School, University of California, Berkeley. Headquarters: Giannini Hall.

Sept. 25—New Jersey Fertilizer Conference, Rutgers University, New Brunswick, N.J.

Dec. 3-4—Annual Soil Fertility and Plant Nutrition Short Course, University of Missouri, College of Agriculture, Columbia, Mo.

Meeting Memos listed above are being listed in this department this week for the first time.

Sept. 4—Grassland Field Day, Rutgers University Dairy Research Farm, Beemerville, N.J.

Sept. 15-17—Canadian Agricultural Chemicals Assn., Sixth Annual Meeting, Fort Garry Hotel, Winnipeg, Manitoba.

Sept. 24—New England Fertilizer Conference, Melvin Village, N.H.

Sept. 25—Chemical Industry Safety Workshop; Shamrock Hilton Hotel, Houston, Texas.

Oct. 13—Agricultural Research Institute Panel on Problems Related to Agriculture in the Fertilizer Producing Industry, Academy of Science Bldg., Washington, D.C.

Oct. 14-15—Western Agricultural Chemicals Assn., Annual Meeting, Villa Hotel, San Mateo, Cal., C. O. Barnard, 2466 Kenwood Ave., San Jose 28, Cal., Executive Secretary.

Oct. 16—National Plant Food Institute Conference on Chemical Control Problems; Shoreham Hotel, Washington, D.C.

Oct. 17—Association of American Fertilizer Control Officials, 12th Annual Meeting, Shoreham Hotel, Washington, D.C., B. D. Cloaninger, Box 392, Clemson, S.C., Secretary-Treasurer.

Oct. 20—Annual Sales Clinic of Sales-

men's Assn. of the American Chemical Industry, Inc., Roosevelt Hotel, New York.

Oct. 20-21—Fertilizer Section, National Safety Council, annual fall meeting, La Salle Hotel, Chicago, Ill.

Oct. 22-24—Pacific Northwest Plant Food Assn., Annual Meeting, Gearhart, Ore., Leon S. Jackson, P.O. Box 4623, Sellwood-Moreland Station, Portland, Ore., secretary.

Oct. 28-29—Northwest Garden Supply Trade Show, Masonic Temple, Portland, Ore.

Oct. 29-31—National Agricultural Chemicals Assn., 25th annual meeting, General Oglethorpe Hotel, Savannah, Ga.

Oct. 30—Annual Southeastern Soil Fertility Conference, Atlanta Biltmore Hotel, Atlanta, Ga.

Nov. 5-7—Fertilizer Industry Round Table, Mayflower Hotel, Washington, D.C.

Nov. 9-11—California Fertilizer Assn., 35th Annual Convention, Ambassador Hotel, Los Angeles, Sidney H. Bierly, 475 Huntington Drive, San Marino 9, Cal., General Manager.

Nov. 10-11—Agricultural Aviation Research Conference, Milwaukee.

Nov. 18-20—Washington State Weed Conference, Moses Lake, Wash.

Nov. 19-20—Carolinas-Virginia Pesticide Formulators' Assn., Carolina Hotel, Pinehurst, N.C.

Nov. 16-18—National Fertilizer Solutions Assn., Netherland Hilton Hotel, Cincinnati, M. F. Collie, 2217 Tribune Tower, Chicago, Executive Secretary.

Nov. 24-25—Entomological Society of America, Eastern Branch, Annual Meeting, Lord Baltimore Hotel, Baltimore.

Dec. 1-4—Entomological Society of America, Annual Meeting, Hotel Utah, Salt Lake City.

Dec. 3-4—North Central Weed Control Conference, Netherland Hilton Hotel, Cincinnati.

Dec. 3-5—Agricultural Ammonia Institute, Annual Meeting, Morrison Hotel, Chicago, Jack F. Oriswell, Claridge Hotel, Memphis, Executive Vice President.

Dec. 8—Annual Soils and Fertilizer Short Course, Coffey Hall, University of Minnesota Institute of Agriculture, St. Paul.

Dec. 9-11—Chemical Specialties Manufacturers Assn., Annual Meeting, Commodore Hotel, New York.

Dec. 17-18—Beltwide Cotton Production Conference, Rice Hotel, Houston, Texas, sponsored by the National Cotton Council.

Jan. 20-22, 1959—California Weed Conference, Santa Barbara, Cal.

July 7-9—Pacific Northwest Plant Food Assn., 10th Annual Regional Fertilizer Conference, Tacoma, Wash.

## Several Factors Involved In Low Wheat Yields

MOSCOW, IDAHO—No one single factor can be held wholly responsible for the lower yields and in some cases shrunken wheat kernels in this year's harvest, according to J. M. Raeder, plant pathologist with the University of Idaho college of agriculture.

Many farmers, Mr. Raeder reports, have felt that rust has been causing all the trouble. "There is no question that rust is present," he explains. "Actually, there are two rusts in the wheat fields, leaf and stem."

A survey extending from Canfield in Idaho County to Copeland in Boundary County, however, produced only scattered instances where evidence pointed to rust as the factor directly responsible for damage to wheat. During this survey, Mr. Raeder visited nearly 60 wheat fields and made 47 rust collections.

"Several factors are involved and, in combination, have resulted in lower yields and in some cases shrunken grain," the plant pathologist reports.

"Leaf rust appeared early in the season and was widely distributed. Appearing as it did on the leaves in such a severe degree, the ability of the leaves to produce food for the developing grain was materially reduced. This, coupled with the hot weather of May, hastened the maturity of the grain at least three weeks. How many old-timers can recollect when as much harvesting and plowing was completed by Aug. 1 as there has been accomplished this season? Stem rust then appeared and added its bit. This rust, however, in many locations, came too late in the development of the grain to cause much damage. In some instances, foot rots aggravated the situation. These roots have been responsible for much of the lodged grain."

## Classified Ads

Classified advertisements accepted until Tuesday each week for the issue of the following Monday.

Rates: 15¢ per word; minimum charge \$2.25. Situations wanted, 10¢ a word; \$1.50 minimum. Count six words of signature, whether for direct reply or keyed care this office. If advertisement is keyed, care of this office, 20¢ per insertion additional charged for forwarding replies. Commercial advertising not accepted in classified advertising department. Display advertising accepted for insertion at minimum rate of \$11 per column inch.

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KILL BRUSH at low cost with amazing R-H Brush Rhap. Will not injure grasses, grains, cattle, or other animals. See your dealer, or write Reasor-Hill Corporation, Box 36CL, Jacksonville, Ark.

## Noted Agriculturist Dies

LOS ANGELES—Dr. George P. Clements, 90, founder of the agricultural department of the Los Angeles Chamber of Commerce, died here recently. A medical doctor in his early life, he came to Riverside, Cal. in 1902 to regain his health which had been impaired by overwork. He studied farming thoroughly and became recognized as an authority. Dr. Clements retired from active work with the Chamber of Commerce in 1939, but remained active in agricultural work until recently.

### RESEARCHER APPOINTED

WILTON, CONN.—Dr. L. H. Sutherland has been appointed assistant director of research for Escambia Chemical Corp., Dr. Mayo Smith, director of research, has announced.

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